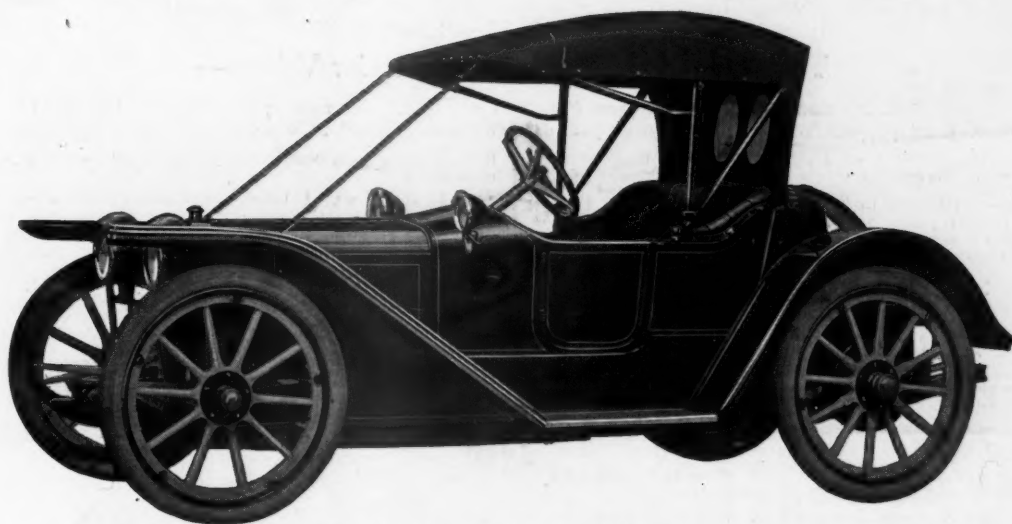


# MOTOR AGE

VOLUME XXI

CHICAGO, APRIL 11, 1912

NUMBER 15



The "American Scout" (Type 22A) \$1425

Strictly a two-passenger car. Wheel base 105 in.; tires, 36x3½ in.; front and rear on Q. D. demountable rims. Regular equipment includes top and top boot; 5 lamps, dash and tail lights electric; Prest-O-Lite tank; high tension magneto and storage battery with coil; one extra rim; combination circular tire holder and luggage box; horn, jack, tools and tire-repair outfit.

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**W**E have stood firmly and patiently in support of a principle materially different from the conventional. We were sincere in our conviction that the "underslung frame" was right; that time and effort would reveal its many virtues, and **WE WERE RIGHT.**

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*added comfort.* The straight line means *less wasted power.* The larger wheels mean *easier riding, tire economy* and *maximum road clearance.*

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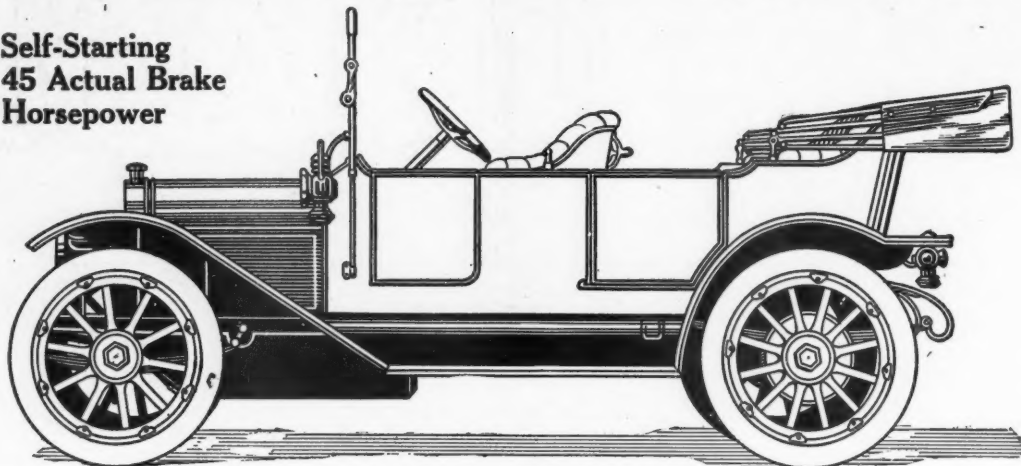
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Four passengers. Wheel base 118 in.; tires, 37x4 in.; front and rear on Q. D. demountable rims. Regular equipment includes top and top boot; 5 lamps, dash lights electric; Prest-O-Lite tank; Bosch magneto and storage battery; one extra rim; shock absorber; robe rail; foot rest; horn, jack, tools and tire-repair outfit.

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Horsepower



MOON "40"—\$1,800

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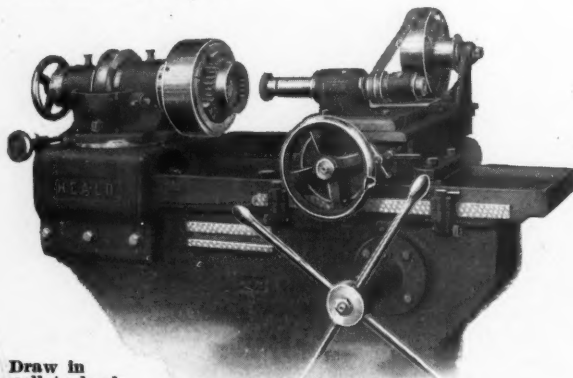
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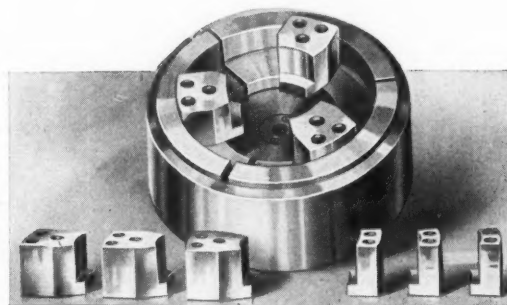
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Published by the  
CLASS JOURNAL COMPANY  
910 South Michigan Avenue  
CHICAGO ILLINOIS

Volume XXI

APRIL 11, 1912

No. 15

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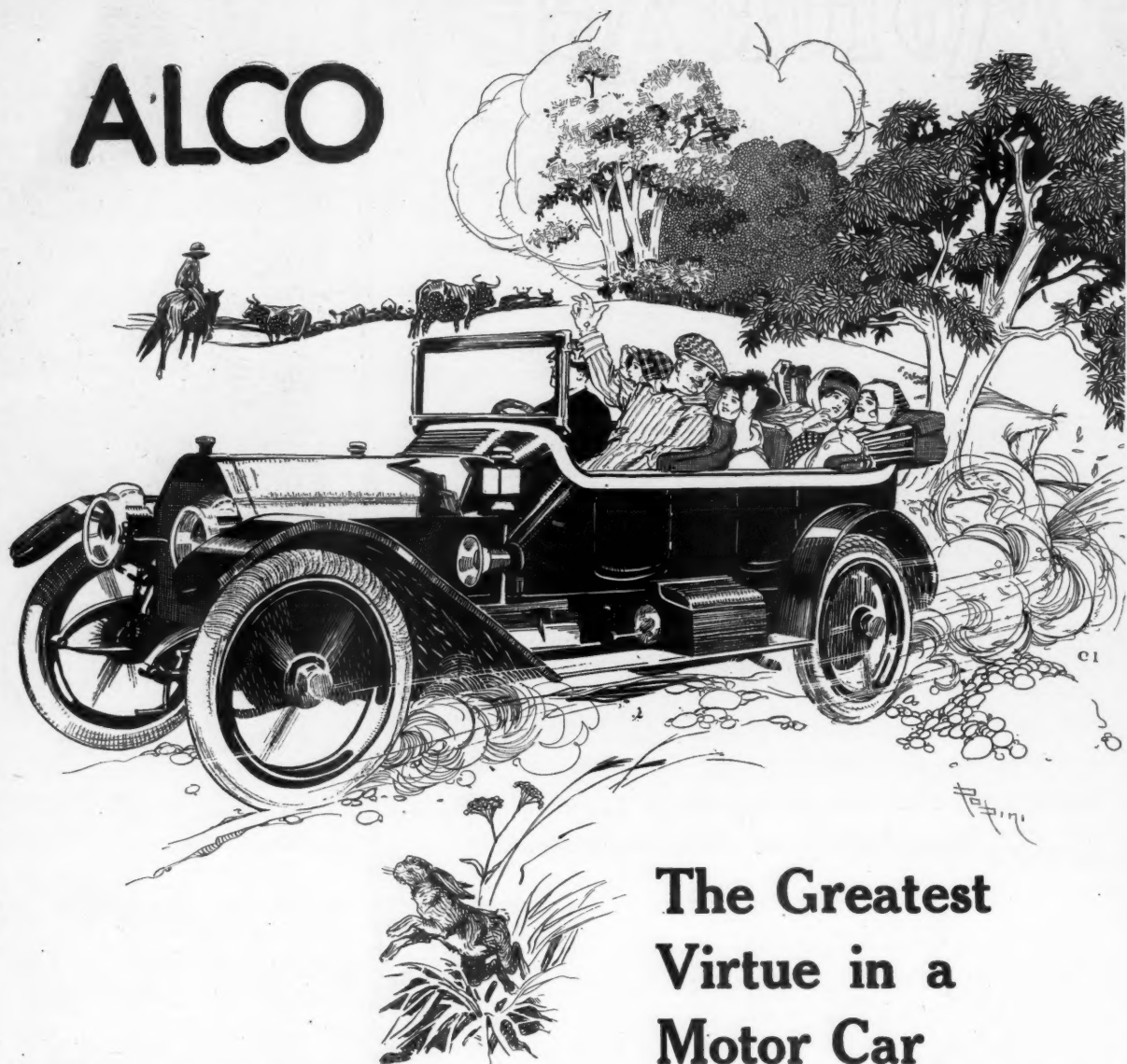
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# MOTOR AGE

## Tuning Up the Car for Summer's Use



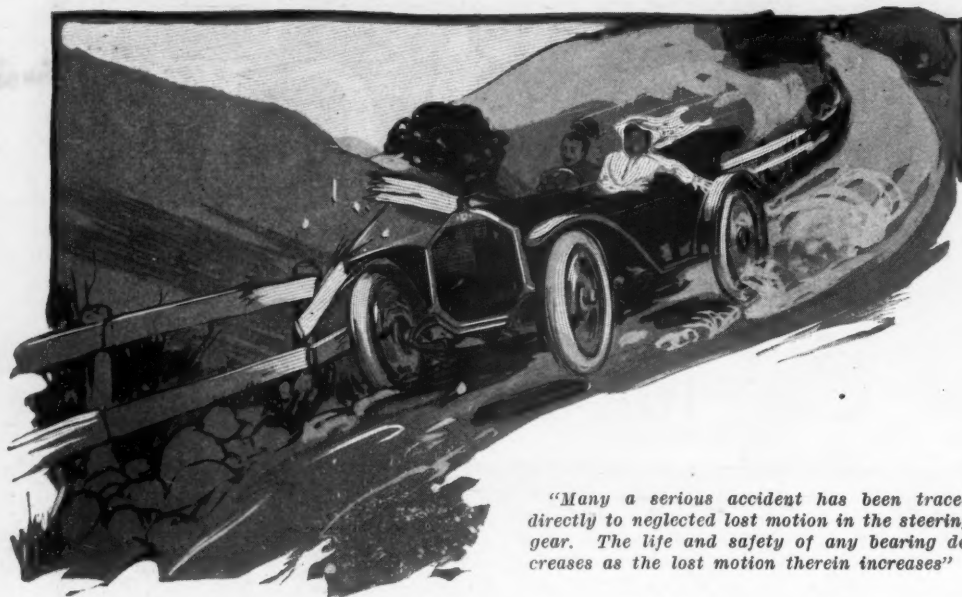
*"Overalls and old clothes should be the mob cap and gingham apron of the owner or repairman tackling the job."*

### Suggestions for the Motorist Who Is Preparing to Put the Machine into Commission —The Spring Housecleaning

By George W. Gaidzik

SPRING is here. There can be no doubt of it, for we have the word of the weather man that the battle of the elements has been finished, that old Winter has been worsted by his younger adversary and that smiling skies and muddy roads are to be the lot of the motorist for the next month or so. The robins are here to assure us that Jack Frost has retired to the far north and that it is safe to thoroughly cleanse the anti-freezing solution from the cooling system of the car and give the machine a thorough looking over. It's spring house-cleaning time for the motorist. Overalls or old clothes should be the mob cap and gingham apron of the owner or repairman tackling the job and the house should be put in thorough order for the driving season that may now be said to have opened.

In tackling the job the water system of a motor can in most cases be very efficiently cleansed with a saturated solution of soda. It is only necessary to dissolve common washing soda crystals in slightly warm water until the water will dissolve no more, to obtain what is known as a saturated solution. The water should be drained from the cooling system and replaced by the solution; and the motor then should be run 1 or 2 hours in order to thoroughly circulate the solution; after which it should be drained out and the system filled with fresh clean water. When filled with fresh water, the motor should be started, the drain cocks opened, and while the water is draining out from the bottom of the radiator a fresh supply should be kept flowing in at the top. About a quarter of an hour's running in this way will suffice to rinse out the solution, and the dirt which it has loosened from the system. The drain cocks then may be closed and the system filled with clear water.



*"Many a serious accident has been traced directly to neglected lost motion in the steering gear. The life and safety of any bearing decreases as the lost motion therein increases"*

There are many cars now in use which do not require a thorough overhauling every year, but every car, especially those which have been laid up for a few months during the winter season, should undergo a spring cleaning before they are entered into service for the coming summer and winter season. This spring cleaning should comprise:

First, a thorough cleaning of all mud, grease and rust from the external portions of the chassis.

Second, the removal of all oil and grease from the interior of the motor, gearset, universal joints, rear axle and wheels, followed by a thorough flushing out of all these parts with kerosene.

Third, the refilling of these parts with a fresh supply of the required amount of a superior grade of oil or grease.

Fourth, the removal of the carbon from the cylinders, either by scraping or the use of some carbon remover, followed by a thorough flushing out by kerosene and the injection of about a tablespoonful of cylinder oil.

#### Oil All Outboard Bearings

Fifth, the oiling of all outboard bearings of the car, including the fan, starting crank, push rods, carbureter, magneto and timer control rods and bearings, the clutch and brake operating mechanism, the axle bearings, the steering gear, knuckles and all of its connections, and refilling of all grease cups on the steering gear and about the motor, clutch, universal joints, axles and spring shackles.

After the cleaning and oiling process is finished, all external adjustments should be inspected. Those most likely to need attention are the wheel bearings, steering knuckle bearings, brakes, and perhaps the carbureter. While going over these parts, watch for lost motion wherever it is possible for it to be present. Take up lost motion wherever it is found; for it not only is the cause of much unnecessary noise, but it greatly interferes with convenient and proper operation of the car. In the strictest sense of the word there

is no such thing as a rattling good car, for a car that rattles is on the down grade, and unless put in timely repair and the rattling eliminated the car will cease to be a good one.

#### Distrust Lost Motion

Lost motion takes place when relative parts are lacking harmonious adjustment. The effect of lost motion in any machine usually is to wrack the machine to pieces long before it would wear out if the proper attention were given to the alignment, lubrication and adjustment of the parts. Where there is lost motion there often is danger. Excessive wear, noise, and inefficiency are its accompaniments; and many a serious accident has been traced directly to lost motion in the steering gear. The life and safety of any bearing decreases as the lost motion therein increases, therefore do not neglect lost motion. Lost motion in a connecting rod bearing increases rapidly and it is attended by a disagreeable knock; and if neglected it will destroy the bearing and probably cause the rod to break loose from the pin. This might result in the breaking up of things in general.

It is not a bad policy to apply a little kerosene to all nuts and connections on a car that is about to be overhauled a day or two before commencing operations on it. This will have a tendency to loosen up whatever rust may have accumulated and facilitate the disassembly of the parts. When mechanisms so treated are still found difficult to disassemble, heat properly applied to the larger or external sections may do the work. In removing nuts, for instance, the nut may be expanded by careful heating with a torch or by heating the jaws of an old wrench to a red heat, applying it to the nut, and when it has cooled down until it has lost its red color, putting a strain on the wrench in the right direction and then striking it a sharp blow with the hammer. To remove brass water piping use two wrenches, one to hold the nipple in the cylinder or radiator, and one to loosen the connecting nut. This

will prevent twisting of the piping. If the connecting nut does not yield readily when two wrenches are used, heat it gently all around and try again, putting an equal strain on both wrenches in opposite directions.

The wiring of the car should be examined very carefully for signs of wear in the insulation. It often is found that at certain places the wires are exposed to continual though slight friction, which ultimately wears through the insulation and establishes a short circuit or escape for the electric current. The timely application of a little insulating tape often will save much trouble in this respect.

#### Inspect the Electric Wiring

Wires often lie close to, or loosen up and fall upon, the hot exhaust pipe and their insulation is destroyed by the heat. At other times they may rub against moving parts, such as control rods of the carbureter or ignition devices, so that the insulation is worn away.

There are thousands of cases of magneto trouble which arise directly from an effort on the part of the repairman, driver or owner to locate and eliminate regular or irregular misfiring in one or more cylinders of a motor, without having first determined whether the fault was in the magneto or the spark plug.

The first thing to do when a motor misses and the ignition is suspected is to test the spark plug. This is best done by loosening the cable from the suspected plug, then while the motor is running carefully draw the end of the cable away from the plug terminal and hold it within  $\frac{1}{4}$  inch of the cylinder or the base of the plug which is screwed into the cylinder. If the spark jumps across regularly the trouble is in the plug; either the points



*"If both wheels should flare in an unsightly manner it would be advisable to have the axle straightened"*



are too far apart, the porcelain insulation is cracked, or the points are short circuited with oil, carbon, water or some other mischievous substance. If the cable is held steadily not more than  $\frac{1}{8}$  inch from the plug and the spark does not jump regularly at the plug end of the cable, reattach the cable to the plug and disconnect it at the magneto, and see if the spark jumps regularly at this point; if it jumps regularly, the cable itself is to be suspected; and if it jumps irregularly or not at all, the fault will either be found in the ground wire or switch, or in the magneto.

#### Clean Out Gasoline System

Should there have been any gasoline left in a motor car which has been standing for a considerable length of time, or should the car have been in service for a season without inspection, it is advisable at this period of the year to drain out the gasoline by disconnecting the feed pipe at the bottom of the tank, both at the tank and at the carbureter. The fuel in the tank should be allowed to drain out as fast as possible into a suitable receptacle so as to carry out whatever dirt or water there may be in the vicinity of the outlet.

The float chamber of the carbureter should be treated in a similar manner. At this time it also is advisable to attach one end of the tire pump to one end of the gasoline line and force air through for a few seconds. With these precautions little trouble should afterward ensue from the result of accumulations of dirt or water. Having thus carefully gone over the motor and its accessories, proceed in the same systematic way toward the back of the car, taking in each mechanism as you move backward. The next thing, therefore, to receive attention should be the clutch.

It is by no means an uncommon occurrence to see a motorist fumble around with his gear-shifting lever for 2 or 3 seconds before getting the gears into mesh, and then to see the car make a few jerks or jumps forward. The noise of the grating gears is extremely painful to the ears of an experienced motorist who realizes the damage that may be done by such operation, and how readily the trouble may be eliminated by proper adjustment of the clutch or the refitting of a new clutch bushing. When the clutch bushing of a cone clutch, for instance, is worn, the clutch hangs down on the spindle or shaft upon which it is mounted so that it bears at the lower portion of the flywheel when disengaged. Thus, it tends to drag and keeps on revolving, making it extremely difficult to shift the gears without the grinding previously mentioned. Wear in a clutch bushing will take place very rapidly if not properly lubricated, and the loss of a grease cup at this point should not be ignored or overlooked by the driver. Unfortunately this bearing often is overlooked owing to the fact that it is generally quite inaccessible. It is important,

however, that it receive regular attention for there is nothing more annoying to the driver and the occupants of a car than the grating of gears when a change is made, and the jerking and grabbing of the clutch when it takes hold. The remedy for a trouble of this kind is to remove the clutch and have a new bushing fitted.

#### Treating Clutch Leather

Providing the clutch is in comparatively good order, if it be of the cone type it should be disengaged and secured in this position. Then the clutch leather should be soaked with neatsfoot oil. This can readily be done if the clutch is disassembled by immersing the whole clutch mechanism in a dishpan containing the neatsfoot oil. It can be applied, however, without removing the clutch, by pouring the oil from a fine-nozzled can on to the top of the clutch so that it will flow over the leather. When applying the oil in this way a pan should be arranged below the flywheel to catch that which runs out and the clutch should be turned slowly so that the oil may be thoroughly distributed about the surface. When thoroughly anointed allow the clutch to remain disengaged for several hours so that the oil may soak into the leather.

#### With Multiple-Disk Clutch

In the case of multiple-disk type clutch in which the disks run in oil, it would be well to drain out the old oil, flush out the case with kerosene or gasoline, then replace with the required amount of oil generally used in the clutch; this often being a mixture of kerosene and regular cylinder oil. It may be found with regard to the multiple-disk type of clutch that a thinner lubricant was necessary during the cold winter months; in which case as the weather becomes warmer it may be found advisable to increase the amount of cylinder oil in the mixture so as to thicken it.

Generally the transmission gearset requires but little attention beyond cleaning it thoroughly, looking after the bearings of the shafts, and making sure that the gear-changing lever and its connections are so adjusted as to permit the gears to mesh properly. If it is convenient to remove the grease from the case, it should be done at this time. If there is a plug at the bottom through which it may be drained out, it would be well to mix kerosene with the grease, jack up a rear wheel substantially, then start the motor, put the gears in one speed and let in the clutch so that the grease and kerosene in the transmission gear case may be thoroughly mixed. This will transpose the lubricant to a fluid state and permit of its being drained out through the plug at the bottom of the case. After this the plug should be replaced, fresh kerosene put in, and the mechanism again put into operation to complete the cleansing process. The kerosene then should be again drained out completely, the plug tightly replaced, and the case filled to the required depth with the oil specified by the car manufacturer.

It might be advisable while the case is



"The noise of grating gears is extremely painful to the ears of the experienced motorist"

empty to take hold of the shafts and try to work them up and down to see if there is lost motion in the bearings. If the annular ball bearings or plain bearings of a nonadjustable type are employed, it hardly would be advisable to try to take up any lost motion except where it is sufficiently marked to cause possible trouble before the next overhauling. If, on the other hand, the transmission bearings are loose, and adjustments are provided, this becomes an opportune time to make the necessary adjustments.

#### Regarding Drive-Shaft or Chains

Next in order to receive attention are either the universal joints of the propeller shaft or the driving chains. If the universal joints are encased it is well to open the cases, clean out the lubricant and any dirt that may have worked its way in, oil the bearing surfaces with cylinder oil, then pack the case with grease. As for the chains, there are two methods of cleaning them, the most convenient of which is to jack up and operate one wheel either by hand or under power of the motor and then, while in operation, squirt gasoline upon them to cut away the grease and dirt. If very dirty, this operation may be facilitated by applying the gasoline with a brush before using the squirt gun. Avoid the use of a rag or waste for this purpose if the wheels are revolving under power from the motor. When the chains are thoroughly cleaned, stop the motor, take a handful of medium-grade grease and rub it all over the chains, squeezing the lubricant into the rollers with the hands and fingers. Work the grease between the rollers and side links; then wipe off the superfluous grease on the outside of the chain to prevent as far as possible the accumulation of grit and dust which

would tend to cause excessive wear. The other method of treating consists in removing the chains and cleaning them thoroughly in hot soda water or gasoline, carefully loosening up each link and roller, then, after drying the chain, thoroughly immersing it in a bath of hot tallow and graphite mixed in the proportion of one part graphite to seven parts tallow. This mixture should be heated to about the boiling point of water and after the chain has remained in it for 15 or 20 minutes it should be suspended so that the superfluous tallow may drain off.

#### Do Not Neglect the Brakes

Knowing the importance of keeping the brakes of the car in the most perfect working order, their adjustment should be carefully looked after at this time. To do this, one should begin by removing the wheel and giving the brake-operating mechanisms, both inside and outside of the drum, a thorough inspection for wear; loosen up any dry or rusted connections, adjust or replace all worn parts and see that they are properly lubricated. At this time the brake linings also should be cleaned with gasoline and a brush and inspected for wear. While the wheels are off, the bearings should be given attention. If any balls are damaged or show

signs of wear, an entirely new race of balls should be fitted, and any damaged cones or cups replaced. Work of this kind should be left to the skilled repairman. If on inspection the bearings are found in good order, they should be carefully adjusted before an attempt to adjust the brakes is made, for unless the wheel bearings are properly adjusted proper adjustment of the brakes is well-nigh impossible.

#### As for the Rear Axle

The mechanisms of the rear axle may be treated in practically the same manner as the gearset. The driving pinion of the rear axle often is greatly in need of adjustment because it cannot readily be regulated without the operator getting under the car. It is important, however, that adjustment be maintained at this point, as in all bearings for that matter, for lack of it in this case not only is detrimental to the bearing itself but also causes excessive wear of the teeth on both the pinion and driving gears; and the lost motion thus created gives rise to a worrying noise when the car is in operation. This adjustment should be made while the wheels are being revolved under the power of the motor at a fairly high rate of speed and the brakes applied occasionally for a few

seconds at a time to put a drag on the wheels. The adjustment is most correct when the gear is operated under a load with the least noise.

Having finished the rear axle mechanism, the steering gear might be next to receive attention. No feature of the motor car requires a more thorough inspection than the steering mechanism, though it may require but little attention otherwise. In the steering mechanism itself it is quite possible that no adjustments will be necessary, though it is advisable to remove the grease cup and squirt a few gunfuls of cylinder oil into the case. Follow this by forcing grease into the case with the grease cup until the lubricant begins to work out through the bearings.

#### Inspect the Steering Gear

If there is excessive lost motion in the steering wheel one should see whether the lost motion exists between the wheel and the steering arm, or between the steering arm and the road wheel. If it exists between the steering wheel and the steering arm it undoubtedly is due to wear or lack of adjustment in the steering mechanism bearings for which adjustments often are provided. If there are no adjustments, however, it would be advisable to have either a new pin or new bushings fitted, or

# Freight Car Famine Practically Over

J. S. Marvin, Traffic Expert, Believes Industry Has Seen Worst of Poor Transportation—N. A. A. M. Man Gives His Views on Subject—Detroit Reports Railroads Are Doing Better This Week

NEW YORK, April 8—James S. Marvin, assistant general manager of the National Association of Automobile Manufacturers, an authority on traffic, has investigated the famine in freight cars and today announced that in his belief the worst is over and that the motor industry soon will have no cause for complaint in this matter.

"Reduced efficiency of the railroads, due to the long, cold, hard winter, is the reason for the present freight congestion. The general demand for shipping facilities is only a small amount larger than it was last year, when there was no marked congestion," says Mr. Marvin.

"The normal time for fast freight between New York and Chicago is 60 hours, or 2½ days, and under present conditions it takes 10 days or more for the same job. If it required only 60 hours last year and 10 days this year, it is apparent that the shipping needs of 1912 would require more than four times as many cars as in 1911. As such a volume is unbelievable with present equipment, the conclusion must be drawn that the actual volume of general freight being handled this year is less than it was last, despite the fact that all the hundreds of thousands of surplus

freight cars are now in service throughout the country.

"The past winter was of extraordinary severity and caused much delay in shipments. The spring was late—only last week 5 inches of snow fell at Cleveland. The result is the present situation.

"Several of the manufacturing companies have resorted to express service for emergency business. The difference in cost is a material item. For instance, the rate from the factory to New York by freight in carload lots is \$64, based upon a minimum weight of 10,000 pounds. The average motor car freight car is 8 feet wide, which is too narrow to accommodate any but the smallest size of car placed side-wise. The average sized motor car will go about two to the car, and if they weigh 6,000 pounds, the minimum rate of \$64 will be assessed. If three cars can be arranged in the railroad car, the same rate would apply, because the gross weight would not reach 10,000 pounds.

"The express rate for the same service is \$200 a car, based upon a minimum weight of 10,000 pounds. The express car is of the same width as the ordinary motor car freight car, but is much longer. It would be quite possible to ship five motor

cars of moderate size, say 12 feet over all, in a single car. These motor cars would be of the size and type of which three would go into the freight car. The actual weight is 2,116 pounds per unit. Thus, by freight the transportation charge would be \$21.34 per car. The actual weight of the express shipment would be 10,580 pounds, making the gross express charge \$212, or \$42.40 per unit. Of course, where only two cars can be shipped by freight and three by express, the rate per unit would be \$32 and \$66.67 respectively. The express rate, therefore, is approximately double that of ordinary freight shipment as far as motor cars are concerned.

"The present congestion can be cured by good weather. The railroads are quite as much interested in clearing the situation as the manufacturers can be, because freight revenues are only derived from the transportation of goods and delays in transit mean material loss to the roads.

"One car doing the work of four, as at present, is an attractive proposition from the viewpoint of the roads, because it can be handled with one-quarter of the operating expense that is required for the four."

#### FREIGHT CAR FAMINE BREAKS

Detroit, Mich., April 8—Freight conditions have improved 50 per cent since April 1 and the number of motor cars stored since the freight-car famine began, has been so reduced as to amount to a



both. Often most of the lost motion in a steering mechanism exists in the connections between the steering arm and the knuckles of the wheel. Make sure, however, that the steering arm itself is perfectly secure upon its shaft. As for the connecting links between the steering arm and knuckles, it would be well to disconnect these, thoroughly clean up the pins or balls of the joints, fit new pins or bushings where excessive wear is found and remove all lost motion.

At this time the road wheels should be inspected for misalignment, which should tend either to make steering difficult or cause excessive wear of the front tires or both. Misalignment of the front wheels may be caused by poor adjustment of the steering knuckle connections, by sprung steering rods or arms, or by a twist in the axle from road shocks, all of which result in throwing the wheels out of parallel with the proper lines of action.

#### Lining up Front Wheels

In lining up the front wheels, from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch of foregather is necessary. This means that the foremost points of the wheel felloes should be from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch closer together than the hindmost points of the wheel felloes. These points, of course, are to be found at the height of

the center of the wheel hub. A quick method for testing this feature of front wheel alignment is to measure the distance between the felloes in front and then do likewise behind the axle. The rear measurement properly being found as above stated from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch less than from wheel to wheel in front.

#### Also Note Vertical Alignment

The front wheel should then be inspected for vertical alignment. This generally can be done in a fair way by standing a few yards directly in front of the car and noting whether or not the wheels converge uniformly toward the ground. If one wheel should tend to flare out noticeably at the bottom, or if both should flare out in an unsightly manner, it would be advisable to take the car to a good repair man and have the axle straightened. It may be that the axle is weak and has been sprung, or perhaps the car has been driven with considerable of an overload. In either case it is advisable to have the axle straightened so as to reduce the wear on the bearings and steering mechanism, making steering easier, and improving the appearance. There also is a small factor of danger in driving about with a sprung axle, for if the injury was obtained by negotiating unusually

rough roads, or having dropped into a deep hole, an injury may have been inflicted which weakened the axle considerably and perhaps to such an extent that it may give way at any moment with direful results.

It is assumed that in the beginning the body was removed in order to facilitate the operations upon the mechanisms beneath it, and it is advisable before replacing the body to thoroughly cleanse the upholstery and the top.

#### A Final Inspection Advisable

In conclusion, before replacing the body, go over all mechanism to be covered by it and see that nuts are tight and cotter pins in place, and lubricate every moving point or surface with the hand oil can, being careful to wipe off with a cloth all superfluous oil smeared upon the outside of the parts, which would only serve to collect dust from the road. After this carefully replace the body, and after it is secure in place, again go over the entire mechanism with the hand oil can as above mentioned. The object in doing this is two-fold, for not only do you succeed in lubricating all outboard bearings, but the search for all of these little parts that might wear will also reveal any neglected parts that might previously have been overlooked.

## Weed Gains Point in Milwaukee Court

### Judge Sanborn Issues Preliminary Injunction Against Makers of Pioneer Chains—Case Involves Anchoring Proposition on Anti-Skid Device and Is First to Reach Decision—Decision Given in Full

merely negligible quantity. The Cadillac shipped 616 cars during the week ending April 13, averaging better than 100 cars for each working day. This greatly relieved the pressure in this factory, where conditions had been such that cars had been stored for weeks in the streets about the factory. The Ford factory averaged shipments of between 200 and 300 cars daily. The Studebaker Corporation, which produced in March a total of 4,276 cars, has been maintaining this fast clip with little or no difficulty in securing freight cars at its sidings.

To guard against the conditions which prevailed through the winter, several of the railroads have ordered large quantities of motor freight cars, which will be available in a few months. Double-decking has come to be a regular feature of motor car shipments and the latest models of freight cars are equipped with sockets which can be used for this purpose, relieving the shipping departments of the factories from the present necessity of building an entire upper deck. Cars shipped in this way have the wheels removed. This process allows shipment of as many as eight cars in a carload, provided the machines are not of the extremely long type.

#### FEDERAL TIRE APPOINTMENT

Milwaukee, Wis., April 8—Charles Measure, formerly with Goodyear, has been appointed manager of the carriage and motor truck tire department of the Federal Rubber Mfg. Co.

MILWAUKEE, Wis., April 8—A preliminary injunction has been granted in the case of the Weed Chain Tire Grip Co. against Herbert R. Johnson and others by Judge Sanborn of the eastern district of Wisconsin, district court of the United States, the first decision, it is stated, that has been reached in the litigation in which the main feature has to do with anchoring by means of an extra piece of chain fastened to one of the side members, with a snap hook on the loose end.

The device in question is the Pioneer grip, which is made by Herbert R. Johnson and Alexander P. Schellin from parts said to be supplied by the H. Channon Co. The Pioneer, it was pointed out, has an anchoring member, while attached was a notice directing the purchaser to use the extra piece of chain in anchoring the grip to the wheel so as to prevent creeping. It was contended by the complainants that any metal traction device that was anchored to the wheel would destroy the tire and that the motoring public knew that a flexible chain grip, if permitted to creep on the tire, would reduce wear and tire injury to a minimum so that anchoring members supplied with chain grips would

be discarded and the grips used in an ordinary manner. It also was alleged that these anchors were adopted solely to attempt to evade the Parsons patent and were abandoned when the apparent need for such purpose ceased.

Judge Sanborn, in his decision, stated that his belief is that "the furnishing of the anchors was simply a subterfuge to evade the rights of the patent owners." His decision, which is a short one, is as follows:

Application for temporary injunction against infringement of the Parsons patent sustained in the Weeds cases, 192 Fed. 35, 41. The alleged infringing device is the same as that of the patent, with the addition of a chain anchor fastened to one of the side members, and long enough to reach over the felloe and snap into the other side member. If actually used the anchor prevents the chain from traveling around the tire.

The case has been very thoroughly prepared on both sides, hundreds of affidavits having been taken all over the country. Defendant claims that he cannot possibly be regarded as anything more than a contributory infringer, and that he in good faith intended the anchors to be used by the purchasers of the chains. Without deciding whether this position is well taken or not, I am thoroughly convinced that he never had any such intention. The furnishing of the anchors was simply a subterfuge to evade the rights of the patent owners. A preliminary injunction should issue.

The next step in the litigation will not be reached for several months, it is expected by the lawyers.

# Flanders Rumors Lack Foundation

**D**ETROIT, Mich., April 8—The return to Detroit of Walter E. Flanders and the series of conferences which have taken place between him and General Manager Gunn, of the Studebaker Corporation, have revived the rumors which have connected Mr. Flanders with the formation of another factory to make gasoline cars. Apparently these are as lacking in real foundation as those which have preceded. In fact, it is predicted by the few in Mr. Flanders' confidence that an announcement will shortly be made, stating that an adjustment has been made, by the terms of which Mr. Flanders will renew his active connection with Studebaker affairs.

While it seems admitted by all concerned that Mr. Flanders will, in the future, devote a larger share of attention to the Flanders Mfg. Co. of Pontiac and Chelsea, it is probable that he will maintain a close advisory relation with the big Detroit factory which he built up to so prominent a position in the industry. In the re-adjustment of Studebaker affairs, Mr. Flanders has remained third vice-president of the corporation.

It is known that, since his return from Florida, Mr. Flanders has been regularly at his desk in the Studebaker headquarters in Detroit.

The presence in Detroit for several days of President J. J. Cole, Vice-President Frank Kuqua and other officials of the Cole Motor Car Co., and C. P. Henderson of the Henderson Motor Sales Co., which has been the distributor of the Cole output, gave ground for a report that the Cole people were contemplating a change of manufacturing base from Indianapolis to Detroit. This was flatly denied by several parties to the conference. Just what the object of the conference was, however, remained a secret, for nothing leaked out during the visit.

Another interesting event was the visit here of P. J. Dasey of the Stevens Mfg. Co. of Rome, N. Y. This company makes carbureters and a general line of brass goods, supplying several Detroit factories. Mr. Dasey admitted that he was here to look into the feasibility of moving the Stevens plant to Detroit. While here he held a conference with the Detroit Board of Commerce committee. He left to look into conditions at Bay City and other points in Michigan before making any decision in the matter.

One of the new Detroit factories which is passing through the formative stage is the Miller Motor Car Co. which has had experimental models out for some time and has started manufacturing at Custer and Richmond avenues. Ralph W. Keeler, formerly connected with the Hupp Motor Co., has been appointed general manager. Mr. Keeler announces that his company

## Gossip About New Concern to Make Cars Set at Rest by Announcement Big Tradesman Will Renew Active Studebaker Connection—Henderson Gives Out Details of the Deal at Indianapolis

will build about 150 cars before July when production will be switched to a 1913 model, experimental work on which is already well advanced.

### RULES ON LOCK WASHERS

Washington, D. C., April 7—In the case of United States vs. the Motor Car Equipment Co., involving the dutiable classification of lock washers, the United States court of customs appeals made the following ruling: "The authorities concur in the conclusion that lock washers or nut locks, intended for use on motor cars, are an evolution of the common washer, and they are properly to be designated 'washers.' The importation is dutiable as such under paragraph 162, tariff act of 1909, at the rate of three-fourths of 1 cent per pound, and not as manufacturers of steel not specially provided for, under paragraph 199, at the rate of 45 per cent ad valorem."

### LABOR TROUBLES IN ENGLAND

London, March 30—Labor troubles in connection with the coal strike have not seriously affected the manufacturers of motor cars. There has been no stoppage of any of the plants, for those makers who depend on coal for their motive power have had the foresight to lay in a sufficient stock to tide over the time of the shortage in coal production. Another point is that the majority of the motor car plants in this country use oil or gas engines.

The general loss of trade in the country owing to the coal strike undoubtedly will affect the sale of cars to some extent, but the outlook is not considered at all serious.

### HENDERSON ANNOUNCES DETAILS

Indianapolis, Ind., April 6—R. P. Henderson, vice-president of the Henderson Motor Sales Co. announces that plans for the building of the Henderson pleasure car had been completed and that the first model will soon make its appearance. Chester S. Ricker will be the designer and mechanical engineer for the new company.

That the car will be built in Indianapolis is expected, although it is known that several outside cities have submitted flattering terms to locate with them. Thomas Biddle, representing a civic body of Toledo, O., was in Indianapolis and offered tempting inducements.

The new car will have a 116-inch wheelbase, self-starter and electric light equipment. Unique arrangements have been

made for carrying compartments. The gasoline tank is to be peculiarly mounted. The new company is now building three chassis in Indianapolis, each with different motors and parts, which will determine the final car.

Among the stockholders in the new company will be Charles P. Henderson, R. P. Henderson, Chester S. Ricker, L. Carter of Jesup, Ga., and E. E. Rogers.

### BIG STUDEBAKER PRODUCTION

Detroit, Mich., April 8—During March the Studebaker Corporation's Detroit factory produced an almost equal number of E-M-F 30 and Flanders 20 cars, to the combined value of \$4,276,000. Across the Detroit river, at Walkerville, Ont., the Studebaker Corporation of Canada was increasing this record by an output marketed at \$325,000 more. The grand total for the month's work was, therefore, exactly \$4,601,000. This record was set despite the fact that a freight car famine was prevalent in Detroit throughout the month, rigidly limiting the number of cars which could be marketed daily. But for this handicap, the value of the March Studebaker product would have been increased by at least \$500,000 this month. On March 30, 374 new motor cars were loaded at the Studebaker sidings and started on their journey to the salesrooms of ninety-eight Studebaker branches and dealers in the United States and abroad.

### ANOTHER WINDSHIELD SUIT

Hartford, Conn., April 5—The Holcomb Co. of New Haven, which has a branch in Hartford, has been made the defendant in a suit brought in the United States district court by the Twentieth Century Motor Car and Supply Co. of South Bend, Ind., alleging that the defendant has infringed certain letters patent on a windguard for motor cars. The complainant company asked for an injunction and an accounting of the profits. The matter will be heard shortly.

### GEARLESS RECEIVER APPOINTED

Indianapolis, Ind., April 6—E. W. Hoover has been appointed receiver for the Gearless Steering Device Co. of Indianapolis, by agreement of all of the parties concerned. It is possible that after the plaintiff has made further investigations, the case will be dropped. The suit for receiver was brought by Samuel Toole, a stockholder, who said he had been induced through misrepresentations, to invest \$11,000 in the company. He sued for a receiver and judgment for \$15,000.



# Chicago Wants Fall Motor Truck Show

**Trade Association Applies to N. A. A. M. for Sanction—Ambitious to Put on Affair in Coliseum—Supreme Court Declines Rehearing of Patent Monopoly Case—Board of Trade Holds Meeting**

CHICAGO, April 6—The Chicago Automobile Trade Association, having had a taste of show promotion with its fall opening, is anxious to try its hand at something bigger, and formal application has been made to the National Association of Automobile Manufacturers by President N. H. Van Sicklen and Henry Paulman, chairman of the show committee, acting independently of the association, for a sanction to hold a commercial motor vehicle show next fall in the Coliseum. The deal for the Coliseum has not been consummated as yet, that being a matter between the Chicago association and S. A. Miles. If it is impossible to get the building and the sanction is granted, some other building will be taken. At any rate, the C. A. T. A. hopes to put on such an exhibition.

## PATENT REHEARING DENIED

Washington, D. C., April 8—The supreme court of the United States today announced it would not reconsider its patent monopoly decision which was handed down March 11, holding that in selling a patented machine the patentee may require the purchaser to use only such supplies for the machine as are purchased from the owner of the patent, notwithstanding the fact the supplies are not patentable. It is stated that none of the justices concurring in the decision desired a rehearing and as the rules of the court provide that a rehearing will not be granted unless a justice who concurred in the judgment desired it, there could be nothing done. This leaves it up to congress to amend the patent laws so as to limit the rights to use the patents enjoyed by their owners.

## CALL OUT FOR SALES MANAGERS

New York, April 5—At the quarterly meeting held yesterday, it was decided by the members of the Automobile Board of Trade to issue a call for a gathering of sales managers of the various companies, for general discussion of trade conditions. This follows the recent meeting of the commercial vehicle manufacturers, and is in line with the co-operative work in which the organization is now actively engaged.

President Clifton presided at the meeting, which was taken up largely by a discussion of trade conditions. Reports at hand indicates that the spring selling season is now in full swing, with the demand for cars at a point that is pressing the production departments of all the makers.

North of New York the cold and stormy weather has tended to delay sales somewhat, but from the south and various

other sections of the country the statements indicate sales far in excess of previous years..

The N. A. A. M. also held its quarterly meeting, but nothing of moment happened. The Velie company was admitted to membership, while it is stated that the Warren, King and Federal truck soon will join.

Tradesmen present at the meeting talked over prospects, the general tenor of which was that business is excellent at the present time. Nearly every factory is working overtime and the only complaint seems to be the scarcity of freight cars.

## NEW HART-KRAFT DEAL

York, Pa., April 6—A \$200,000 corporation is about to be organized, it is said, to take over the Hart-Kraft Motor Co. The increased capital will be used to enlarge the factory. The Hart-Kraft company was incorporated on February 1, 1907, with a capital of \$115,000. It went into the hands of the receiver more than a year ago. It is rumored that prominent capitalists who have associated with them a successful motor car manufacturer and a practical man from the Mercedes plant in Germany, have been looking over the property of the company with the view of purchasing the entire plant, with a plot of ground adjoining the present factory.

## GRAND RAPIDS MAY LOSE PLANT

Grand Rapids, Mich., April 8—Unless the Central West Improvement Association of this city gives its influence toward the sale of stock in the Van L. Commercial Car Co. that concern may remove to one of the several cities which are making overtures to it. The company however, it is stated, is unable financially to proceed with its sales end of the business and also, it is stated, is unable to finish up nine cars which are almost completed. To the end that the company may continue business here the Commercial Service Truck Co. has been organized with a capital stock of \$120,000. Subscriptions will be taken. The sentiment of the improvement association strongly favors helping the company and action to that end probably will be taken within a short time.

## STRAIGHTENING OUT JONZ CASE

Louisville, Ky., April 6—At a meeting held at the Hermit's Club, the incorporators and organizers of the American Automobile Corporation, formed for the purpose of acquiring the plant and business of the American Automobile Mfg. Co. of New Albany, Ind., perfected their organization by electing the following officers: Presi-

dent, L. A. Boli, Jr.; vice-president, Dr. George N. Little; secretary and treasurer, N. E. Jones. The following additional directors were chosen: Dr. F. P. Brockett, William Skillicorn, C. Charles Jones, E. O. Boli, Dr. J. W. Baxter, Charles Hayden, John F. Seger, Louis Bauer and Martin A. Seward.

The court has authorized the New Albany Trust Co., receiver of the American Automobile Mfg. Co. to accept offers for the sale of the plant on or after April 20, which must be reported to the court in order to give the stockholders, creditors or others who may have an interest an opportunity to file objection to the sale. In case there is no valid objection the property will be sold.

It is believed that the American Automobile Corporation will be the only bidder and will purchase the plant of the American Automobile Mfg. Co. at a reasonable price and will continue the operation of the plant in New Albany. According to one of the directors of the former organization, no attempt will be made to place the Jonz vapor-cooled two-cycle motor on the market as the old concern had planned, but, should the American Automobile Corporation acquire the plant, he stated, the factory will be used to assemble pleasure cars and trucks equipped with water-cooled motors. Only a few of the parts will be manufactured at the New Albany plant. The new concern expects to employ about fifty men and will turn out a car each day.

By agreement of attorneys representing the various interests of the receivership of the American Automobile Mfg. Co., the court will allow the claims of the employees for wages due. The workmen will be paid as soon as their claims are adjusted and an allowance is made by the court for an amount sufficient to pay the claims.

## NEW ONE IN MANISTEE

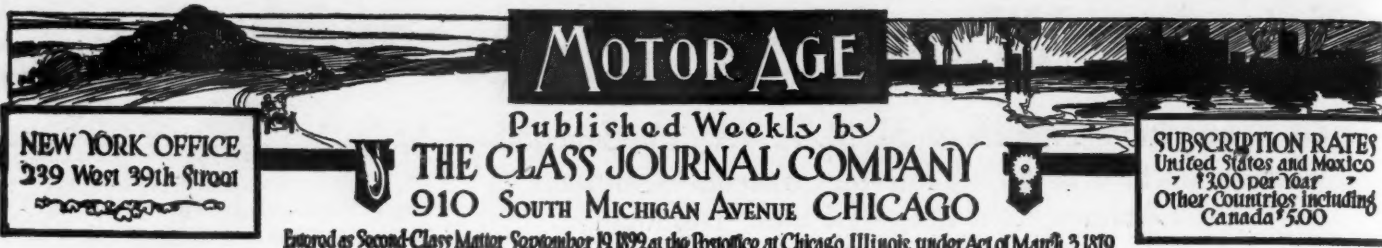
Manistee, Mich., April 8—The Manistee Automobile Co. has been organized at Manistee to manufacture a low-priced runabout and also a delivery truck. Charles Elmen-dorf is president and general manager and George N. Burr is secretary and treasurer. The capital stock is \$51,000.

## GRAY & DAVIS INCORPORATE

Boston, Mass., April 6—Gray & Davis of Boston, manufacturers of lamps and dynamos, have incorporated under the laws of Massachusetts, with a capital stock of \$1,200,000. This incorporation was made necessary by the growth of the business during the past year.

## BRISCOE MFG. CO. CHANGES

Detroit, Mich., April 8—J. A. Boyle, general manager of the Briscoe Mfg. Co., has been elected vice-president of the company, and J. A. Holihan has been promoted to assistant general manager.



**NEW YORK OFFICE**  
 239 West 39th Street

# MOTOR AGE

Published Weekly by  
**THE CLASS JOURNAL COMPANY**  
 910 SOUTH MICHIGAN AVENUE CHICAGO

Entered as Second-Class Matter September 19, 1892, at the Postoffice at Chicago, Illinois, under Act of March 3, 1879

**SUBSCRIPTION RATES**  
 United States and Mexico  
 \$3.00 per Year  
 Other Countries including  
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## Rest and Business Dispatch

**T**HIS excerpt from the brief submitted to the finance committee of the United States senate in behalf of the motor car makers and the industry in general tells of the immensity of the feeling of unrest among our manufacturers which has been brought about by delayed and long-drawn out patent litigation cases as well as by continued discussion on tariff reduction in motor cars and motor car parts imported from Europe.

**T**HIS extract is from one of the many bodies and organizations that have appealed for rest—rest from needless agitation, that distracts boards of directors and that upsets business interests for years and years because of continued legal controversies, such as the industry has passed through and is passing through today. The car manufacturer does not, in asking for business administrations of matter pertinent to the industry, wish to evade any letter of the law, nor does not want any unjust favors. He wants dispatch in business and dispatch in legal cases. He wants dispatch so as to get through with the different legal cases and be free to use his energies in developing the industry and developing foreign as well as home trade. The voice of protest raised by the makers in the brief referred to has been raised by the representatives of a score of other industries. It is a voice of protest that has been heard from one end of the country to the other. It is the voice that tells of unrest in business enterprises; the unrest arising from lack of governmental and legal decisions and the prolongation of periods of suspense that might be reduced to a comparatively short period.

**T**HE above extract refers to the continued delay of legal decisions in patent cases. Everyone remembers the Selden case, which rested in the patent office from 1879 until 1895 before the patent was finally issued, and then how the matter dragged through the courts from that date until a year ago when the final court decision was handed down. Such conditions injure business, they injure industries, they breed unrest and unrest consumes the nerves and physical energies of the men who are the guiders and safeguards of the industry.

**Q**UICKER action is needed in the patent field. Shorter periods are needed in the granting of patents and greater dispatch is needed in the legal determination of patent status. Many solutions are offered for quicker action in granting patents. One in the form of a bill was introduced in Washington a few days ago to amend the law fixing a period of 6 months as the maximum time to elapse from the time of application for a patent until its being granted. This bill is aimed at the present law which permits a patentee to string his application for patent along for as many years as he desires before the final word in the claims is made and the patent granted. There are many patents that have been granted within the past few months that were applied for in the last century. Some of these cover what are considered important features in car construction and it may be that another decade will be needed to deter-

mine whether these patents are valid or not. It is this prolonged suspense that the maker is objecting to.

**B**UT the suspense is not confined only to the car maker; it extends to the car owner. Within the last month several car owners have received letters from lawyers calling their attention to infringements of certain patents in the cars they operate and requiring them to pay royalty. In some cases royalties of as high as \$25 have been paid. Other car owners are in a quandary today as to whether they, too, will not be called upon to pay royalty. Such conditions are damaging to the industry. They breed unrest. If the present unrest and uncertainty in patent cases continues it will be necessary for some car makers to furnish guarantees on every car they sell insuring the buyer against prosecution by patent holders of constructions which are considered infringements.

**T**HE American patent law is claimed by many of the best patent lawyers to be head and shoulders above the patent laws of any other country. They claim that it is largely due to the patent law that America has been such a fertile ground for invention. They claim further that in many European countries the patent laws actually hamper the inventive ability of the people. To a degree this is so, but one of the greatest reasons for the fertility of the American inventor is the freedom of the American workman. In America it is easy for a subordinate workman to get his devices patented, and once the patent is obtained he has an opportunity of drawing the attention of the head engineers to his device. There are many foreign factories in which the inventive ideas of the workman are buried by jealousies of the department heads. There are factories in which it is impossible for a workman to get his devices to the front. Some of the workmen have not sufficient funds to push their ideas through the patent office and with thousands of others is the inbred feeling that they are only workmen and that developing ideas and getting them patented are not enterprises that they have any right to follow.

**T**HE American car builder, in protesting against the reduction in tariff on foreign cars and parts, is asking protection against the cheap foreign labor used in the factories but is also giving protection to American brains, to the American inventive spirit, which must be developed and given every opportunity to develop and work out its new ideas. Viewed in this light alone and if for no other reason, the present attitude of the maker is a most justifiable one.

**T**HERE is not any conflict between protecting this inventive ability by having patent laws that will give every freedom to it and yet having patent laws that will carry the business through with dispatch. Dispatch in the patent office is just as important as dispatch in the courts when the question of deciding validity or infringement is concerned.



# Big Tire Companies Reduce List Prices

NEW YORK, April 8—Tire prices, which were reduced at the time of the shows for the benefit of the dealers mainly, have been dropped again and this time it is the consumer who profits most. Announcement of the price-dropping is made this week and practically every concern of prominence is in line. These concerns which have not changed their lists are preparing to do so.

As illustrating the new prices, the standard 34 by 4-inch casing is taken as an example and the prices to the consumer quoted. Goodrich is retailing the casing at \$31.30, while Fisk, United States and Diamond are asking \$33.60.

Reasons for this reduction are many. The generally lower level of crude rubber prices in comparison with those current in July last, when the old list was made up, is the first one given. Then there is the adjustment of jobbers' and consumers' prices in order to eliminate price-cutting, while the abandonment of the retail field by the United States Tire Co. and the entering of it by Goodrich has had something to do with it.

Rubber prices are materially lower than they were last summer, although the current level is about 20 cents a pound above rock-bottom. Figuring on a margin of 30 cents a pound, the difference represented by the cut is not dissimilar to the saving on crude rubber.

The second factor, mentioned above, is most important. When the reductions were announced to jobbers and dealers last winter, it was freely stated that the consumers eventually would get the benefit. Some of the companies had been complaining that the cut-rate jobbers and dealers had been in the habit of selling at less than published consumers' rates and that the practice had become so widespread that the actual market price of tires had been reduced to approximately 5 per cent of the price to dealers. This involved loss of trade to the dealers who maintained prices and resulted in a large trade at very small profit to the dealers who met the reductions to consumers or originated them.

After the reduction last winter in the jobbers' prices, the nominal margin of profit was 20 per cent. Actually it was not far from 14 per cent, but the tire makers discovered that the dealers were giving their customers portion of the additional 10 per cent, and to clear the situation it was decided to reduce the consumers' prices to correspond with the action to the jobbers.

The B. F. Goodrich Co., however, has gone a step further. It has frankly and openly chopped 15 per cent, horizontally, from every item on its tire list. Just as frankly and openly it has announced that the move has been made to discourage un-

## Consumer Profits Most by the Drop—Leading Concerns Quote New Rates

official price-cutting, by reducing the nominal margin of profit to 5 per cent.

In all cases the nominal level of dealers' prices remains as it was after the January cut, although in some cases the large jobbers can probably get equitable trade concessions.

The Goodrich cut represents a reduction to consumers of about 5 per cent below the published list prices to preferred jobbers, effective prior to January 1, 1912. In other words, Goodrich tires now can be purchased by consumers at 5 per cent less than preferred jobbers had to pay for them before the reduction of 10 per cent during the Madison Square garden show.

The Fisk Rubber Co. has out a new list of prices by which the cost of Fisk tubes

is raised 10 per cent and those of Dunlop tubes, 15 per cent, and raising the price of 3-inch casings 10 per cent. The new list of the Fisk company in all other respects merely amends the old list in force before the first of the year, to conform with the 10 per cent cut to dealers announced at the show.

The United States Tire Co. has formulated a new list of prices to the consumer. This is 10 per cent less than the prices in force according to the printed lists of last fall. This does not mean that the company will re-enter the retail field.

The Diamond company has reduced consumers' prices 10 per cent. Goodyear has made no announcement to date, but is expected to take some action in the immediate future.

## SITUATION IN CHICAGO

Chicago, April 8—Fighting the price-cutter with the most effective weapon—bringing the prices down so the margin of profit is so small as to discourage those concerns which make a practice of slashing—is the reason given by the tire men for the general reduction that went into effect this week. The new prices favor the consumer more than the dealer, which is the aim of the rubber men who want the prices so low as to discourage the practice of some owners in buying from concerns which cut prices. The dealer also comes in for recognition but not to so great an extent. In the main, it might be said that the new prices put the consumer on the same footing as the dealer who was the one to profit when the prices dropped at show time.

## FOREIGN TIRE PRICES DROP

London, March 30—There has been a reduction in the price of tires in Europe, caused, it is said, by the efforts of one of the largest rubber concerns to control the tire trade of France by means of reduced prices, which are intended to starve out the smaller makers. A great part of the reduction in price falls upon the middleman, as the discounts have been cut down to a very low figure, whereas formerly discounts up to 25 per cent could be obtained on tires. Now the middleman has to content himself in many instances with a bare 10 per cent, so that while the list price has been very greatly reduced, the amount actually paid to the manufacturers has not been reduced to the same extent, a large proportion of the difference having thus been provided by the middleman.

## THE RUBBER MARKET

New York, April 8—Crude rubber had a rather dull week all told. The fluctuations were narrow, but the trend was upward. Sales were made up to \$1.17½ a pound, but volume of business was small, particularly for the better grades.

## Coming Motor Events

April 6-13—Annual show Oswego, N. Y.; Ottawa Valley Motor Car Association.  
April 8-13—Annual show Oswego, N. Y.  
April 13—Truck parade; Motor Truck Club, New York.  
April 27—Speedway race; Los Angeles motordrome; Los Angeles, Cal.  
April 29-May 4—Annual show Burlington, Vt.; Merchants' Protective Association.  
May 4—Hill-climb; Atlanta, Ga.  
May 4—Road race; Motor Car Dealers' Association; Santa Monica, Cal.  
May 14-17—Commercial reliability run Chicago Motor Club, Chicago, Ill.  
May 18—Sociability run at Washington, D. C.  
May 17-18—Track meet; Colorado State Automobile Association; Denver, Colo.  
May 30—Indianapolis speedway, 500-mile race; Indianapolis, Ind.  
May 30—Track meet; Salem, N. H.  
May 30—Track meet Rockingham park; Salem, N. H.  
June 20—Algonquin hill-climb, Chicago Motor Club; Algonquin, Ill.  
June—Reliability run; Auto Club of St. Louis, St. Louis, Mo.  
June—Hill climb; Maine Automobile Association; Portland, Me.  
June 27-29—Summer meeting Society of Automobile Engineers; Detroit, Mich.  
July 4-5—Track meet; Taylor Automobile Club; Taylor, Tex.  
July 4-6—Beach meet; Old Orchard Automobile Association; Old Orchard, Me.  
July—Road race; Riverhead, L. I.  
July 4—Track meet; Petersburg, Ind.  
July 10-20—Canadian Industrial Exhibit; A. C. Emmett, manager motor section; Winnipeg, Can.  
July 15—Reliability run; Wisconsin State Automobile Association; Milwaukee, Wis.  
August 8-10—Galveston beach meet; Galveston, Tex.  
August 23-24—Road races; Chicago Motor Club; Elgin, Ill.  
October 5—Fairmount Park road race; Quaker City Motor Club; Philadelphia, Pa.  
September 2—Speedway meet; Indianapolis, Ind.  
September Track meet; Universal Exposition Co., St. Louis, Mo.  
Sept. 23-Oct. 3—Rubber show, Grand Central palace, New York.  
October 7-11—Chicago Motor Club reliability run; Chicago.  
October 12—Track meet; Rockingham park; Salem, N. H.  
November 6—Track meet; Shreveport Automobile Club; Shreveport, La.

# Milwaukee Receives Encouragement

W. K. Vanderbilt, Jr., Consents to Having Grand Prix and Vanderbilt Road Races Run in Wisconsin—Badgers Excited Over Prospects and Announce Tentative Plans for Big Speed Carnival Next Fall

MILWAUKEE, Wis., April 8—William K. Vanderbilt, Jr., president of the Motor Cups Holding Co., today wired the Milwaukee Automobile Dealers' Association to the effect that Milwaukee's proposal to hold the Vanderbilt and grand prix had been favorably acted upon at a meeting of the Motor Cups Holding Co. Monday, which makes it almost certain the classics will be run in Wisconsin. The next step is to apply for sanctions to the A. A. A. and A. C. A.

The trade association held a meeting tonight at the Plankinton to organize for the speed tourney and to raise the necessary funds. The dealers have guaranteed \$5,000 and the balance of \$50,000 is expected to be contributed by citizens and local organizations. The mayor is chairman of a general executive committee appointed tonight for the purpose of raising this money. The state highway commission has volunteered to superintend the improvement of the course and the township supervisors have promised co-operation and the use of \$10,000 worth of road-building machinery recently purchased.

Labor day is favored for running the races, but it is thought this could not be had because of the national stock chassis road races at Elgin the third week in August.

## Milwaukee Is Confident

Certain that the Motor Cups Holding Co. favors Milwaukee this year, the M. A. D. A. has gone out and obtained assurances of the donation of two other international trophies, to be competed for during the running of the Vanderbilt and grand prix, as is customary. One of these trophies will be known as the Milwaukee Challenge cup and will be hung up by the combined business associations of Milwaukee. The other will be a trophy of practically equal value with the two principal trophies, and will be hung up by a prominent Milwaukee business man, whose name is withheld. The donor's name, however, is believed to be Colonel Gustav Pabst, head of the vast Pabst brewery interests, and one of the most enthusiastic backers of the M. A. D. A. in the venture.

The Challenge cup probably will be a light-car race to be run during the Vanderbilt, similar to the Savannah Challenge cup, and the personal trophy, probably the Pabst, will be run co-incidentally with the grand prix.

The state, county and local governments are said to be unqualifiedly in favor of holding the races in Milwaukee. This means, also, that the matter of policing the

course by means of soldiery will quickly be settled by the allotment of state troops by the governor, who is a life-long resident of Milwaukee and always an enthusiastic booster for the metropolis of the Badger state.

## Races Probably in October

The races will be held between August 15 and October 15, presumably near the latter date. Wisconsin climate will not permit of the running of races later than October 15 or November 1, as the temperatures generally are low during this period and the precipitation is rather heavy. It is, therefore, expected that the races will be held between October 1 and 15, if Milwaukee lands them. This means that the M. A. D. A. can lose no time in getting after the work of improving the course. Whichever of the two courses in the township of Greenfield now proposed is chosen, a lot of work must be done to get them in condition for any kind of speed. As the roads are today, a car going 30 to 40 miles an hour would last about 15 minutes. However, the state highway commission, which is entrusted with the distribution of an annual appropriation of \$350,000 for state aid for highway construction, and an exclusive supervisory power over all road construction designed to benefit from state aid, will be enlisted without any difficulty and in 2 or 3 months the present roads can be turned into smooth stretches of fine dirt road, surfaced with macadam and oiled.

The length of the preferred course, which has for two of its legs the Beloit and Janesville plank roads, two famous trunk highways built by the pioneers of Milwaukee for ox-cart travel, has impressed favorably the interests governing the Vanderbilt and grand prix trophies. The speedometer reading on the preferred course is 10.7 miles, which would give thirty to forty circuits for the running of the Vanderbilt and forty to fifty for the grand prix. The Challenge and Pabst cup races would be from 200 to 300 miles, it is expected.

## Roads Wide Ones

The roads comprising the preferred course are generally 35 to 45 feet wide, but at present there is only about 17 to 22 feet fit for travel. By grading and leveling, the race course would average 35 feet in width, well crowned and excellently drained.

The farmers living along the routes of the proposed courses are favorably impressed by the project.

There are at present no laws prohibiting races in Wisconsin and none could be

passed before January, 1913, when the next legislature convenes. The only restrictive law of any kind is that fixing the speed limit of motor travel on country highways at 25 miles per hour, but this would be waived under proper restrictions with regard to public safety and convenience.

As compared with the Savannah course of 1911, either of the courses proposed at Milwaukee is many times better. There are no railroad crossings, either grade or elevated, and the entire courses are on high and dry ground, and without many curves. They are short enough to make the races interesting from the spectators' point of view, bringing each car in front of the stands one and one-half times as many as in any previous running of the contests. Both courses are away from cities and thickly populated territories, although close enough to avoid inconvenience in getting to and from them. Fifteen hundred militiamen could guard the course with a minimum of difficulty.

Official representatives of the Motor Cups Holding Co., A. C. A., A. A. A., N. C. A. and other interests are expected in Milwaukee late this week to look over the ground.

## SPEEDWAY SANCTION INCREASED

Indianapolis, Ind., April 8—Notice has been received by the Indianapolis motor speedway that the contest board of the American Automobile Association has decided to increase the fee for the 500-mile race from \$200 to \$1,000 on the ground that the prominence of the event prevents other contests at that time of the year, this decreasing the revenues of the board.

## NEW A. A. A. CONTEST BOARD

New York, April 6—The new A. A. A. contest board consists of twelve members selected from various parts of the country, all of whom are amateurs. The complete list of board members, together with state representatives of the contest board, is as follows:

Contest Board—William Schlumpf, chairman, 437 Fifth avenue, New York City; H. W. Knights, Boston, New England; Frank G. Webb, Brooklyn, New York; P. D. Folwell, Philadelphia, Pennsylvania; Joseph H. Wood, Newark, New Jersey; Charles I. Ryan, Atlanta, south; David Beecroft, Chicago, middle west; Frank M. Joyce, Minneapolis, northwest; R. W. Carr, San Antonio, Texas, southwest; Ralph W. Smith, Denver, Rocky Mountain district; P. J. Walker, San Francisco, Pacific coast.

Advisory Committee—S. A. Miles, Jesse Froehlich, H. A. Bonnell.

State Representatives—A. M. Kennedy, 109 Commerce street, Montgomery, Alabama; G. P. Bullard, Fleming block, Phoenix, Arizona; P. J. Walker, Monadnock building, San Francisco, northern California; Edward G. Kuster, I. W. Hellman building, Los Angeles, southern California; Ralph W. Smith, 240 Coronado building, Denver, Colorado; C. H. Gillette, Aetna Accident



and Liability Company, Hartford, Connecticut; Henry M. Taylor, 1306 Broome street, Wilmington, Delaware; H. B. Race, Jacksonville, Florida; Charles I. Ryan, Fourth National Bank, Atlanta, Georgia; R. W. Spangler, Twin Falls, Idaho; David Becroft, 910 South Michigan avenue, Chicago, Illinois; C. W. Sedwick, Union Stock Yards, Indianapolis, Indiana; C. A. Kneeder, Sioux City, Iowa; P. M. Milner, 1659 Soniat street, New Orleans, Louisiana; T. C. Campbell, Tulane theater, New Orleans, Louisiana; D. W. Hoegg, Jr., 12 Monument square, Portland, Maine; Dr. H. M. Rowe, 21 West Fayette street, Baltimore, Maryland; H. W. Knights, 87 Commercial street, Boston, Massachusetts; Dr. C. E. Dutton, 602 Nicollet avenue, Minneapolis, Minnesota; Robert B. Bridge, 207 North Pearl street, Natchez, Mississippi; W. P. M. Stevens, 223 Midland building, Kansas City, Missouri; W. D. Hosford, Omaha, Nebraska; C. M. Floyd, Manchester, New Hampshire; Joseph H. Wood, foot Madison street, Newark, New Jersey; Frank G. Webb, 105 Garfield place, Brooklyn, New York; James R. Gray, Jr., Winston-Salem, North Carolina; W. J. Price, Fargo, North Dakota; Nelson B. Ruggles, Parsons and Broad streets, Columbus, Ohio; H. L. Keats, Seventh and Burnside streets, Portland, Oregon; P. D. Folwell, Third and Cambria streets, Philadelphia, Pennsylvania; Charles E. Doe, 341 South Water street, Providence, Rhode Island; A. McP. Hamby, Columbia, South Carolina; H. C. MacCoshen, Watertown, South Dakota; R. W. Carr, P. O. Box 882, San Antonio, Texas; W. D. Rishel, Tribune building, Salt Lake City, Utah; W. W. Brown, Springfield, Vermont; Dr. H. W. Bassett, 108 West Grace street, Richmond, Virginia; F. M. Fretwell, Pacific Highway Association, Seattle, Washington; T. A. Westmyer, Ohio Valley Automobile Club, Wheeling, West Virginia; George A. West, 1215 Railway Exchange, Milwaukee, Wisconsin.

#### DENVER COAXING TOURISTS

Denver, Colo., April 6—In an effort to attract 15,000 or more motor touring parties to the state of Colorado this summer, the Denver Chamber of Commerce has inaugurated a vigorous campaign for funds with which to flood the east with advertising matter and touring information about Colorado within the next 2 months. The plan adopted for the campaign was to send to citizens throughout the state a letter setting forth the advantages of drawing motoring visitors to the state and enclosing a coin card requesting the help of each recipient of a letter to the extent of 25 cents, or a half dollar if he did not happen to have a quarter. Thousands of replies are being received from points throughout Colorado and as a result of the liberal response of thousands of boosters the chamber will have a large sum to expend in the printing and mailing of at least 100,000 beautifully illustrated folders which will show to eastern people the various transcontinental highways and interesting trips in Colorado.

More than 6,000 touring parties visited the state last summer and the Chamber of Commerce and various other booster bodies are determined that the number shall more than double for the season of 1912. Within the last week since the weather has opened up and sent the motorists to the open roads a number of cars from other states have been noticed on the streets.

#### PACKARD HAS TOURING SCHEME

Detroit, Mich., April 6—To stimulate European touring, the Packard Motor Car Co. has launched an innovation in connection with its Paris branch. A number of 1912 models are being shipped to France to figure in a rental plan which has many unusual features. The rental method frees the tourist of all official entanglements. It

avoids the expense of crating and shipping cars across the ocean on the voyage over and return. It relieves the traveler of the necessity of making customs arrangements at the port of entry and at every frontier. The indemnity insurance is provided for and the marine risk is eliminated. Driver's licenses are arranged for in all countries including in the itinerary. The Paris branch furnishes gasoline and oil and assumes all responsibility for repair parts and tires.

#### DISBROW'S MILE RECORD

New York, April 6—The mile record of :38½, made at San Diego, Cal., March 31 by Louis Disbrow in the Jay-Eye-See, will not displace Burman's Brighton Beach mark, for the reason that the San Diego track is a 2-mile oval. Disbrow, however, gets a record, his time beating the mark of :51½ which was held by Barney Oldfield, made in 1907 in the Green Dragon. Five thousand persons attended the race meet. Disbrow drove the Case White Streak 2 miles in 1:50½ and a Simplex 12 miles in 11:17. Joe Nikrent won the 6 mile race with the Case Bullet in 1:44½. H. H. Shain in a Schacht beat Nikrent in the Case Bullet in the 10-mile race, time, 9:36. Disbrow drove the Jay-Eye-See 2 miles in 1:44½. Nikrent has joined the Case team.

#### QUESTIONS FEDERAL RIGHTS

Madison, Wis., April 6—An interesting question as to federal rights with regard to the operation of motor cars without state registration and license is to be settled by the courts soon. L. M. Compton, superintendent of the government Indian school at Tomah, Wis., recently applied to the Wisconsin secretary of state for registration and license without cost on the claim that the car is to be used exclusively in federal service. The secretary of state refused to issue the license unless the customary fee of \$5 was paid. F. H. Abbott, assistant commissioner of Indian affairs at Washington, has ordered Mr. Compton to operate the car without a license in the premises, and the police authorities of Tomah have been ordered to enforce the law requiring every car operated in Wisconsin to be registered and bear license tags.

#### TESTING CHAUFFEUR'S RIGHTS

Buffalo, N. Y., April 9—During the past week arguments were heard by Judge Taylor in county court on the appeal of Theodore P. Meinhardt, chauffeur, from his conviction and fine of \$5 in city court for failing to secure a chauffeur's license. Charles J. Staples appeared for the chauffeur and Assistant District Attorney McLaughlin for the state. Mr. Staples declared that the Callan law's provisions requiring chauffeurs to take out a license is class legislation and unconstitutional. Attorney Staples asserted that all the

chauffeurs in Buffalo are awaiting a decision in this case because it is the first attack in the courts on the license provision of the Callan law. He argued that 90 per cent of accidents is due to the reckless and careless driving of inexperienced owners and their sons and daughters. Judge Taylor reserved decision.

#### DENVER PLANS LONG TOUR

Denver, Colo., April 6—Large motor tours from the east to the west are more or less common in these days of transcontinental travel but the Denver Chamber of Commerce is planning for a sociability run from Denver to New York that is said to be the first organized tour which will take any considerable number of motor cars in the opposite direction. This run was planned to take place last fall, but the season was too far advanced before the arrangements were completed, and it was postponed. Assistant Secretary Kittredge of the chamber says that Denver motorists are manifesting a lively interest in the project and that already he is sure that thirty cars will be entered by private owners and dealers. There will be more of the sociability than the reliability element in the tour for the entrants wish to take more time in the different places through which they pass than a reliability tour will allow.

Not only will the party do what it can to spread the fame of Colorado but it will exert its influence to secure for central Colorado a leg of the official transcontinental route. With this end in view the tourists, leaving Denver on June 1 will travel to Omaha over the Platte Valley White Pole road which Denver wishes to have recognized as the official road into the state from the east; and when the contemplated improvements in the mountain sections to the west of the city are completed, as they probably will be within a few months, this Omaha-Denver stretch will form a part of the most direct and most beautiful road across the continent.

The route from Omaha will include Chicago, Cleveland, Buffalo and Albany. Already the Chamber of Commerce has received hearty invitations from commercial bodies in the various cities on the route for entertainment. Vigorous correspondence will be carried on within the next few months with motorists along the road who are contemplating western tours and an effort will be made to induce a number of them to join the Denver party on the return trip.

#### ANOTHER SPEEDWAY ENTRY

Indianapolis, Ind., April 9—The seventeenth entry for the 500-mile race has been received—a Marquette-Buick, nominated by William Thomson, of Battle Creek, Mich., who has chosen William Liesaw to drive.

# Litigation in the Eastern Courts

## Republic-Morgan & Wright Appeal Argued—Fisk vs Auto Tire Co. Not Yet Reached—Warner vs Stewart & Clark Comes Up—Weed Gets Preliminary Injunction Against Best Chain Grip Makers

NEW YORK, April 8—Appeal from the decision of the United States district court in the case of the Republic Rubber Co. against Morgan & Wright, involving the validity of the Mell patent on staggered treads and the alleged infringement of the nobby tread manufactured by the defendant corporation was argued before the United States circuit court of appeals last week.

There was nothing specially new brought out in the presentation of the case, but the arguments were fully defined. In the ordinary course of court procedure the case will probably be decided late this month. The decision is of the utmost importance to the motor trade on account of the broad construction which may be placed upon it. If sustained, the patent may be made the basis of suits aimed at a number of non-skid treads now on the market.

Suit instituted by the Fisk Rubber Co. against the Auto Tire Co. in the United States district court will not be reached this month. In the meantime an effort is being made to bring the parties together. The suit is based upon the sale and delivery of about \$10,000 worth of casings and tubes for which payment is being withheld. The Fisk company claims that the goods constituted a job lot and the defendant company asserts that some of the goods did not come up to specifications.

It was announced by Sidney Meyers, attorney for the plaintiff, that the differences between the parties were largely those of accounting and understanding.

Suit for the alleged infringement of the two-spring principle of certain types of carbureters, brought by the Stromberg Motor Devices Co. against the Flechter Carbureter Co. of New York in the United States district court is due for answer next week. Alfred Austin has been made counsel for the defense.

### Warner vs. Stewart & Clark

The suit of the Warner Instrument Co. against Stewart & Clark was argued before the United States district court on Tuesday. The suit involves two patents, heretofore described in these columns, covering a principal of magnet construction. A decision is expected about May 1.

Judge Lacombe has handed down his opinion in the suit of Weed vs. Benjamin M. Asch for a preliminary injunction prohibiting the manufacture and sale of the Best chain grip, manufactured by H. E. McLain, of Natick, Mass., in which he sus-

tains the contention of the complainant and decrees the injunction prayed for. The matter will come up on its merits at an early date.

J. M. Gilbert is suing the Republic Rubber Co. for \$10,000 damages for alleged breach of contract involving the licensing of the defendant to manufacture a certain type of detachable rim covered by patent No. 771,445. The suit will be called April 15 and will be heard by a jury in the United States district court.

### Gilbert Suing Republic

The matter at issue is about 5 years old. According to the pleadings, the defendant company secured a license from Mr. Gilbert to use and make the rim in question. It is alleged that the tire company did not make use of its license and that it declined to pay royalties amounting to a considerable sum. The tire company filed a bond at the commencement of the action amounting to \$10,000, as the proceeding was brought by attachment because of the fact that the defendant is a foreign corporation. The defense charges that it abandoned the license rights because of some lack of merit in the patented device. The patent itself is not in issue.

### MOTOR FINANCIAL NEWS

New York, April 8—The General Motors Co. has declared a dividend of  $4\frac{1}{2}$  per cent on preferred stock,—at the rate of 7 per cent per annum—for 7 months to May 1, payable May 1, 1912, to stock of record April 15. The last dividend paid was  $3\frac{1}{2}$  per cent in October. Dates were recently changed whereby the dividends of preferred stock are to be paid on May 1 and November 1 instead of April 1 and October 1, which accounts for the May 1 dividend being for 7 months.

The J. I. Case Threshing Machine Co. announces that all the outstanding 5 per cent first mortgage bonds will be called for redemption at 102½ on May 1, both principal and interest on the bonds being payable at the First Trust and Savings Bank of Chicago or the First National Bank of New York.

The report of the Rubber Goods Mfg. Co. for the year that ended December 31, 1911, shows that the net sales amounted to \$34,587,269 as against \$35,188,295 in 1910. The earnings amounted to \$3,607,896 as against \$2,169,626 the year before.

### CLARK TRUSTEE APPOINTED

Indianapolis, Ind., April 6—Creditors of the Clark Motor Car Co. of Shelbyville, Ind., met Thursday afternoon and elected

as trustee J. Oscar Hall, who had been acting as receiver. There will be a sale of the assets, but no date has been set.

A petition was filed by the Michelin Tire Co., one of the largest creditors, asking that the trustee be directed to institute suit against the Farmers' National Bank of Shelbyville for the recovery of \$7,000 paid the bank by the Clark Motor Car Co. during the month of February, 1912. The petition recites that the officers and directors of the Clark Motor Car Co. are also officers of the bank and were indorsers on the company's paper to the bank, for which reasons the bond indebtedness was paid off to such a large extent.

A petition was also filed by the Industrial Club of Shelbyville, asking that a lien of \$26,000 be asserted against the real estate and buildings of the Clark Motor Car Co. under the terms of a contract made with the Industrial Club at the time the Clark company established its plant at Shelbyville. Hearing on both petitions was deferred to April 16.

### WOULD AMEND PATENT LAW

Washington, D. C., April 9—A number of bills have been introduced into congress at this session to reform the present patent laws. Representative Prouty, of Iowa, is father of one bill to limit the use and transfer of patents, amending the existing law so as to provide that every patent shall bear date not later than 6 months from the time application was filed. The bill also provides that the patentee shall not have the right to control the price at which the patented article shall be sold or the manner in which it shall be sold, except for royalty. It also provides that no limitation of use of the product shall be included in transfer contracts covering the assignment of any patent.

The house committee on patents is busy with a grist of bills from which it is expected that the committee will report several with its indorsement. Chairman Oldfield favors some measure that will provide for an amendment of the law on the restrictive use of patents and a compulsory license clause to compel patentees to permit the public to use patented articles, to fix a reasonable price to any license and for judicial settlement of disputes on that point.

### GOOD SHOW AT GENEVA

Geneva, N. Y., April 8—Although Geneva is the smallest town in New York state to hold a motor exhibition, Manager Louis Blumenstein declares that the show just concluded here was a great success from a local point of view. The original intention was to hold a 2-day exhibition here but the patronage of the people was so great that the show was continued for 4 days. The exhibits at the first local show included \$100,000 worth of cars.



# DuPont Stops Work on Delaware Road

WILMINGTON, Del., April 8—All work—except some unfinished office details—was suddenly stopped last Wednesday on the cross-state boulevard which General T. Coleman duPont has started to build, with the intention of running it through the entire length of the state of Delaware.

The order to stop the work was given by Mr. duPont after the question had been raised as to the constitutionality of the law under which the road was being built, the state constitution forbidding the enactment of any special road laws; but the chief reason for suspending operations was that numerous difficulties have been encountered in acquiring the right-of-way and an effort is being made on the part of opponents to the project to prevent a special legislative session, asked for by Mr. duPont to amend the law so as to make the work plainer sailing.

According to Mr. duPont, it depends upon the people of Delaware whether the cessation is temporary or permanent. If they show that they want the road built and are willing to permit the legislature to convene in extra session and amend the law, so that legal difficulties can be overcome, he is willing to proceed, with the intention of finishing the road within a year, but if the hostility continues, work may not be resumed at all, and the proposed boulevard will never be finished.

The suspension of operations came as a surprise, though some time ago the question of the constitutionality of the act was raised. Some of those who are opposing the project want the road, but they prefer to have it built by the state rather than for the state to accept it as a gift with the obligation to keep it up and give public utility franchises which go with the grant. These franchises will permit the boulevard company, of which Mr. duPont is the head, to use portions of the road for electric railways, pipe lines for gas, steam, oil, etc., conduits, pole lines for wires, etc.

## BAY STATE FIGHTS TAX

Boston, Mass., April 6—The fight against the increase in the motor fees by the Bay state legislature is being worked into shape along progressive lines and the outlook seems good to defeat it if the forces all unite and work in harmony. Chairman Ike Willetts, of the house committee, who was all along supposed to be in favor of an increase, and unfriendly to motorists, is now reported as being opposed to any change in the law. However, Senator F. J. Horgan, who represents Mayor Fitzgerald of Boston, is out to push the bill through. The publicity given the matter last week in the newspapers made the committee very angry and changed its decision to push through the large fees and now the members are floundering around testing

## Highway Philanthropist, Vexed by Obstructions Put in His Way, Temporarily Abandons Plan to Construct Cross-State Boulevard—Massachusetts Preparing to Make Vigorous Fight Against Increased Taxation

sentiment to see if a bill for a flat rate of 50 cents per horsepower would be agreeable.

It is understood that four of the clubs in the Massachusetts State A. A. are in favor of a rate of 50 cents per horsepower, the Springfield, Newton, Brookline and Worcester, but as this number is but 25 per cent of the total clubs, and the state association has but about 2000 members, while there are about 40,000 motorists in the state, the legislators have been told that any compromise that might be made with the state association should not be taken for granted that it means all the motorists are willing to pay an increase. In the four clubs mentioned are many wealthy owners who do not mind paying an increase, so what they believe is not the real motor sentiment.

Already the New England Hotel Men's Association has been asked to jump into the fight and Secretary Kimball has been notified to send a circular to the members to the effect that this is inimical legislation and will injure the hotel business.

## NEW GOOD ROADS SCHEME

Appleton, Wis., April 8—A new and novel plan of improving highways is proposed by business men and merchants of Appleton, Wis., who have organized the Outagamie County Good Roads Club, the object of which is to permanently improve and maintain every principal highway leading into the city of Appleton. The club will guarantee the return in full of all moneys levied against the county under the new Wisconsin state aid law.

The plan is to dispose of 500 shares of stock in the club at \$5 each per year, the sale of stock to be divided or distributed in accordance with the use the stockholders make of the roads, and the proceeds of the sale will be devoted to aid the townships in Outagamie county in securing the return of the state aid moneys, the means being that the good roads club will pay an amount equal to that raised by subscription among the farmers for the improvement of any highway leading into Appleton or in the direction of the county seat.

For example, if the residents in a certain township raise \$500 by subscription for the improvement of a road, the club will pay an equal share, or \$500 for that certain purpose. Then, under the state aid law, the town will have to levy a tax of \$1,000, the county will be obliged to appropriate \$1,000 and the state \$1,000, making \$4,000 for the road, which will cost the township but \$500. The plan goes the state aid plan one better by splitting the cost of high-

way improvement four ways instead of three, as proposed by the highway aid law.

W. R. Hirst, state highway engineer of the Wisconsin Highway Commission, which is in charge of the distribution of an annual fund of \$350,000 for permanent highway improvement, reports that nearly \$1,850,000 will be expended in highway work in Wisconsin this year. Townships of the state have appropriated \$600,000, which sum will be duplicated by the various counties and a like amount by the state.

## MICHIGAN'S ROAD VICTORY

Grand Rapids, Mich., April 6—The recent election in this state did more for good roads in Michigan than anything ever before in the history of the commonwealth. The results were as follows:

Kent county voted to expend \$600,000 for good roads.

Ottawa county voted to expend \$600,000 for good roads.

Genesee county voted to expend \$500,000 for good roads.

Eaton county adopted the county road system.

Jackson county adopted the county road system.

Benzonia township, Benzie county, voted to bond for \$15,000 for good roads.

Homestead township, Benzie county, voted to bond for \$20,000 for good roads.

With its \$600,000 Kent county, including the city of Grand Rapids, will build 220 miles of roads, a system having been worked out by the county road commissioners. The roads will earn from the state rewards aggregating \$100,000. If actual work can be begun July 1 it is possible that 25 or 30 miles can be constructed this year. The plan calls for a thorough system of trunk lines, an engineer and a general manager.

## FIXING UP BAD STRETCH

Boston, Mass. April 6—State Highway Commissioner Frank D. Kemp had a conference a few days ago with Selectmen F. B. Allen and John P. Hartigan of Longmeadow, Mass. as a result of which it is believed that the last stretch of bad road between Boston and New York will be wiped out. The stretch of road in this town extends to the state line and it is said to be about the worst in that section of the state. The selectmen have already undertaken to have a new stretch of road built and a new layout is being made. When completed it will provide a straight macadam road between Boston and New York.

# French Improvements Along Many Lines

The use of the long-stroke motor is seen on every hand, some of the leading makers having shortened the bore and increased the stroke on every one of their models, having gained in power and reduced fuel consumption by this process—Sleeve-valves are gaining—Chain drive for motor shafts on the increase—Few changes in ignition—Lubrication methods have been improved—Reduced motor sizes one of the biggest tendencies

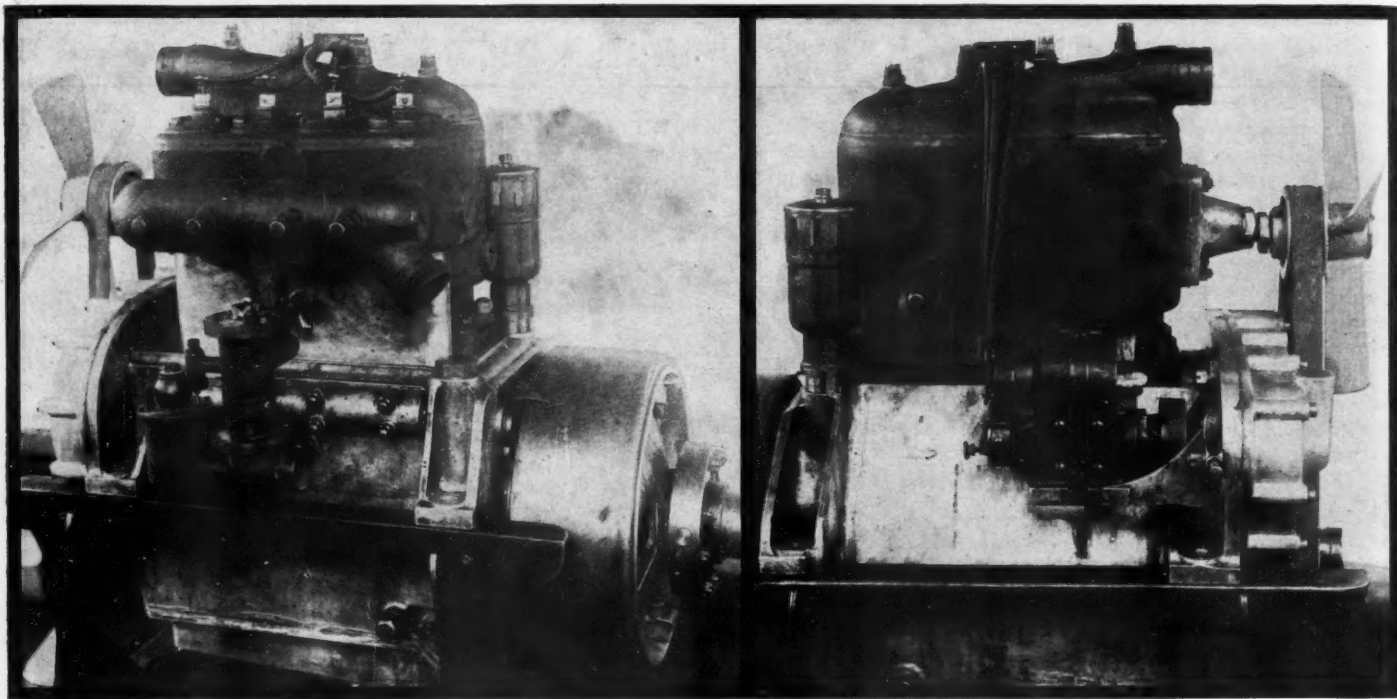


FIG. 1—RIGHT AND LEFT SIDES OF THE CHENARD-WALCKER SLEEVE-VALVE TYPE OF MOTOR

*This is one of the new sleeve-valve types of motors brought out for the coming season and which has been well tried out. A section through the motor is shown in Fig. 3 on a following page and also in Fig. 4 is shown the oiling system. In the left illustration herewith appears the removable semi-cylindrical casting forming the chamber in which the camshaft is carried. This casting affords special accessibility to this part.*

**D**ESPITE the adoption of several rotary and slide-valve motors, the changes made by continental European motor manufacturers are mostly in the nature of detail refinements. Where the poppet valve has been partially abandoned—for no firm has thrown it over entirely—it has been to take up some valveless type already known to engineers. Thus Darraeq has adopted the Henriot rotary valve for one of the 1912 models; Unic in France and N. A. G. in Germany have purchased licenses for the construction of the Reno-Bois sleeve-valve motor exploited in America by the Sphinx company of New York, but neither firm has decided to offer these models to the public during the coming year. The French firm of Buchet, an old-established firm working largely for the trade, has purchased the Dubois rights for a valveless motor, and will produce next year, while Vinot-De-guingand appears to have come to a favorable decision regarding this motor but will not construct it next season. Lorraine-Dietrich has taken out patents for a motor having a single cylindrical reciprocating sleeve, but here again the question of offering it to the public has yet to be decided. De Dion-Bouton is known to be experimenting with a valveless mo-

By W. F. Bradley

tor which may or may not be offered to the public at a future date. Rolland-Pilain, which produced a motor at the last Paris show having much in common with the Knight, is declared to be decided to put it on the market. This is the concern with which the Knight engine people are in litigation at the present time. The French drew first blood, but there will be an appeal.

The C. L. C. rotary sleeve valve motor continues to be produced as a single-cylinder unit, the firm not being in a position at present to produce four-cylinder cars, and up to now no large foreign manufacturer has been found willing to purchase a license to construct. Two or three other valveless motors have been patented by unattached engineers, but manufacturers are hard to please, and more than one case could be instanced of motors which have undergone thorough laboratory tests in different factories, with fairly satisfactory results.

Very close attention is being paid to motors of small size; indeed, this is so pronounced that it is no exaggeration to say that four-cylinder motors of more

than 100 millimeters, 3.9 inches, bore have ceased to exist in France. The big old-established factories—Renault, Panhard, De Dion, Dietrich, Hotchkiss, Delaunay-Belleville, Mors, Delahaye, etc.—build motors having a cylinder bore of 100 and 110 millimeters, 3.93 to 4.33 inches, but these form a very small proportion of their output, while three-quarters of the French factories, comprising all the younger firms, confine themselves to models of 80, 85, 90 or 95 millimeters bore, which are 3.14, 3.34, 3.54 and 3.74 inches. There is a certain tendency towards the production of series of motors having a uniform bore but varying in the length of stroke. Thus, Hispano-Suiza, a Spanish firm with a recently opened factory in Paris, builds motors of only 80 millimeters, 3.14 inch bore, the stroke varying from 110 to 180 millimeters, or 4.33 to 7.08 inches. The same applies to Sizaire-Naudin, where the models are 70 by 120, or 2.75 by 4.72 inches; 70 by 140, or 2.75 by 5.51 inches, and 70 by 170 millimeters, or 2.75 by 6.69 inches bore and stroke, all four cylinder monobloc. Gregoire has fixed on 80 millimeters, or 3.14 inches, as the correct cylinder bore, the stroke being 120 millimeters, or 4.72 inches for the two, four and six-cylinder models, with a more



powerful four-cylinder having a stroke of 160 millimeters, 6.29 inches. The tendency is towards a further lengthening of the stroke, and whereas a year ago the average ratio was 1.5 to 1, the new season's models have an average of 1.62 to 1. The high-water mark is reached by Sizaire-Naudin with 2.42 to 1, followed by Hispano-Suiza with 2.25, and Gregoire, Chapuis-Dornier, Peugeot, and a few others with 2 to 1. The most significant feature is that where motors have been redesigned they have invariably had their stroke lengthened. Thus Panhard prefers 80 by 130, 3.14 by 5.1 inches, instead of 80 by 120, 3.14 by 4.72 inches, for the new Knight; Mors is about to bring out a new six of 80 by 150, 3.14 by 5.9 inches, bore and stroke. Chenard-Walcker has adopted the same dimensions for a new four, and 65 by 120, 2.55 by 4.72 inches, for a smaller model. Georges Richard, the head of the Unie company, has adopted 90 by 130, 3.54 by 5.1 inches, and 75 by 120, 2.95 by 4.72 inches, for his two new models, this being a lengthening of the stroke by 10 millimeters, or .39 inch, in each case. Doriot, Flandrin and Parent have adopted 70 by 130, 2.75 by 5.1 inches, for their new models.

The typical motor is still of the L casting; but in view of the lengthening of the stroke, there is a tendency towards a return to the T head, in order to obtain the space necessary for housing the big valves. Valve area is generally considerable, and as examples may be mentioned Hispano-Suiza with 60 millimeters, 2.36

inches, valves for a cylinder diameter of 80 millimeters, 3.14 inches; and Sizaire-Naudin with 55 millimeters, 2.165 inches, for a bore of 70 millimeters, 2.75 inches. In this latter case the valve stems are hollow. For the present, however, the L head has a decided majority. Up to and including 80 millimeters, 3.14 inches, bore, all motors are in a bloc casting; at 85 and 90 millimeters, 3.34 and 3.54 inches, opinions are about equally divided, though it should be noted that when new motors are produced of 90 millimeters, 3.54 inches, bore, they are more often than not in a single casting. Above 90 millimeters bore manufacturers prefer cylinder castings in pairs.

Silent chain drive for the camshaft has been still more extensively adopted. Among the new comers to this method of driving the half-time shaft may be mentioned Sizaire-Naudin, Chenard-Walcker, Gregoire, Unie, Benz and Panhard for Knight motors only. It is found that provision must be made for taking up the slack of the chain; this is provided for in some cases by an idler pinion mounted eccentrically, while a very neat arrangement is that adopted on the new Chenard-Walcker models. Here the valves are on one side, the chain thus encircling three pinions. The magneto is carried on an independent platform bolted to the back of the timing gear housing and being adjustable laterally. The bearings for the magneto driving shaft being carried on the platform, this latter can be displaced and locked in the correct position for tak-

ing up whatever slack may have occurred.

The tendency was so clearly pronounced during the past two seasons that it is not at all surprising to find a strong move towards lubrication under pressure to all bearings. There is nothing new in this, for De Dion-Bouton and Delaunay-Belleville have employed it for years, but its application has now become so general that all other systems appear likely to go by the board. The base of the crank-chamber forms an oil tank, a pump driven off the camshaft draws the oil from the base and delivers it under pressure to the main bearings and through the bored crankshaft to the connecting rod ends. These are the main features of the lubrication systems of all the new motors, but the details offer a considerable amount of variety. The most common method is to have the oil pump within the base of the crankchamber, working off the end of the camshaft by means of worm gearing, with all the oil leads either cast with the crankcase or welded in position. This has the advantage of neatness, and as the pump and the filter can generally be drawn out through the base of the chamber full accessibility is assured. A few makers, however, prefer to carry the pump outside, bolted to one end of the crankcase, as on the Vinot-Deguingand, or attached to one side, as on the Sautter-Harle. There are some distinctive features on the new models produced by Chenard-Walcker. Here the pump, Fig. 5, is worked off the camshaft, the oil being led to the two main bearings, and through the bored

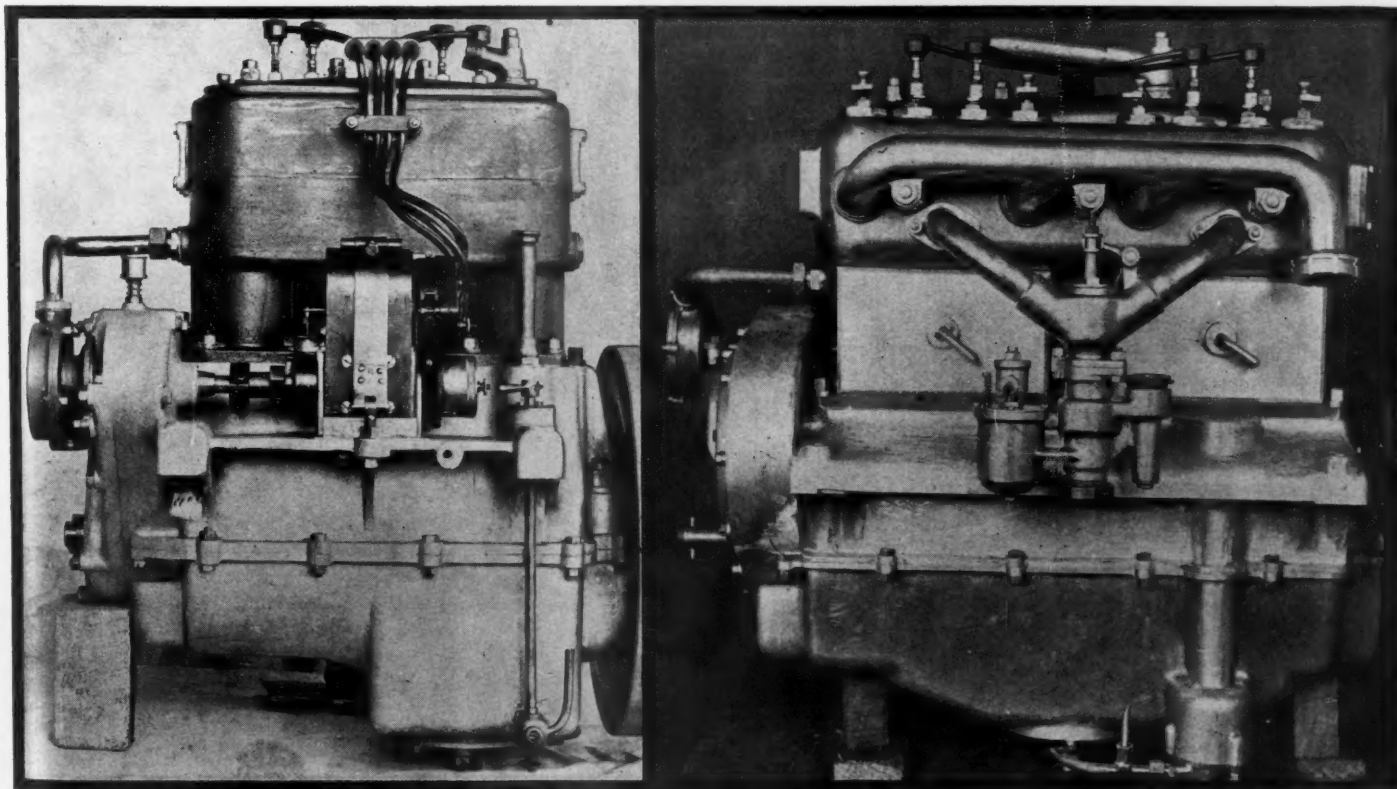


FIG. 2—TWO NEW UNIE MOTOR MODELS FOR THE APPROACHING SEASON, BOTH LONG STROKES

Among the new long-stroke motors for next season are two of the Unie types built by Georges Richards, until recently with the Brasier company. One motor is 3.54 by 5.1 inches bore and stroke respectively and the other is 2.95 by 4.72 inches bore and stroke. The monoblock casting is made use of in both, cages for the valve springs are used, a pressure oiling system is fitted, and silent chain drive is used for the camshaft, magneto shaft and also for the pump shaft. The use of detachable intake and exhaust manifolds shows that in Europe manufacturers are getting away from the use of the integral manifold.

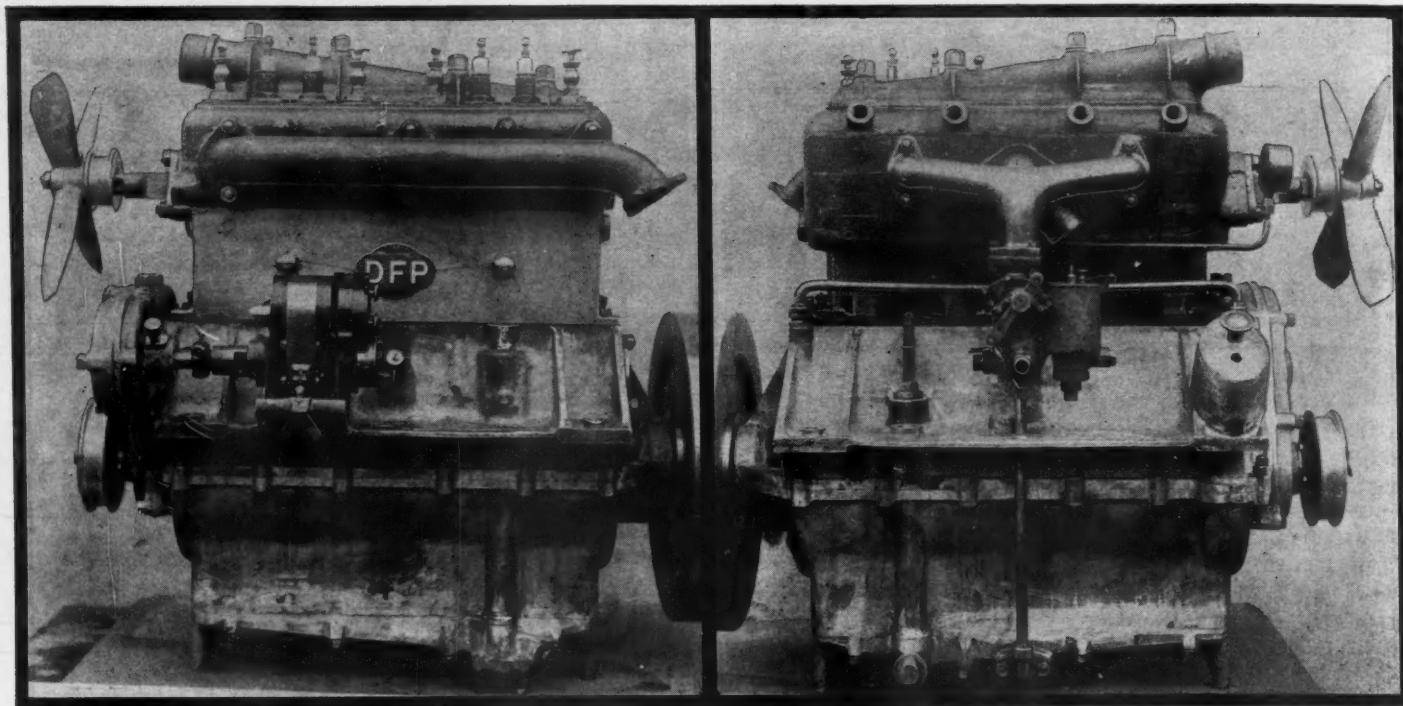


FIG. 3—THE D. F. P. FRENCH MOTOR TYPIFIES FOREIGN IDEAS IN MANY WAYS

The D. F. P. motor differs from many of the low-powered French motors in that the monoblock cylinder casting resembles a T-head type instead of an L-head type. This is only in appearance, however, because both sets of valves are carried on one side, but the intake manifold unites with the casting on the right-hand side and the exhaust manifold on the left-hand side. The intake manifold connects with coreways in the casting which lead through the waterjacket allowing of the intake manifold walls being heated and so preventing any possibility of condensation of the mixture on the path to the cylinders. A forced oiling system is used, the base of the crankcase comprising the oil reservoir.

shaft to the outer connecting rod ends. Claiming that centrifugal force prevents the oil reaching the two central connecting rod bearings, the shaft is not bored right through, but the oil given a semi-circular course through aluminum leads L bolted to the two webs. Another distinctive feature of this motor is the carrying of the camshaft in an independent chamber C within the crankchamber. The oil is carried to this chamber through a valve, and a conveniently-situated overflow prevents the excess being forced out through the tappet guides. This has been adopted not merely to assure a constant supply of oil for the cams, but with a view to silent valve operation. There is interposed between the cam and the tappet an arm A on the top of which is mounted a flat blade springs. Before the valve can be lifted the oil must be driven out from between the two surfaces, and this alone is sufficient to prevent any tapping. The method of mounting is simple, for the eight levers with their blade springs are all carried on one shaft within a housing bolted to the face of the crankchamber. As the chain is in a separate housing at the front of the motor, it is lubricated also by the overflow from the camshaft housing, the oil returning to the base through a filter running the full length of the motor. It is worth noting that on these motors the manufacturers have preferred to use a bronze pinion on the camshaft, declaring that their experiments with three steel pinions have shown a rather rapid wear of the chain.

One of the refinements in connection with pressure lubrication systems is the method of refilling the oil tank in the

base of the crankchamber. The most common arrangement is to have a large mouthed filler on one side of the crankchamber, or on the front when a cross shaft is used for driving the magneto and the radiator is on the dash, with a fibre or steel gauge descending into the oil tank. The Chenard-Walcker people have

adopted an automatic filler. On the front of the dashboard is a supplementary oil tank T with a large-diameter by-pass leading to a glass dial on the driver's side of the dash, the object of this merely being to show that a quantity of oil remains in the tank. A straight length of piping runs from the dashboard tank to

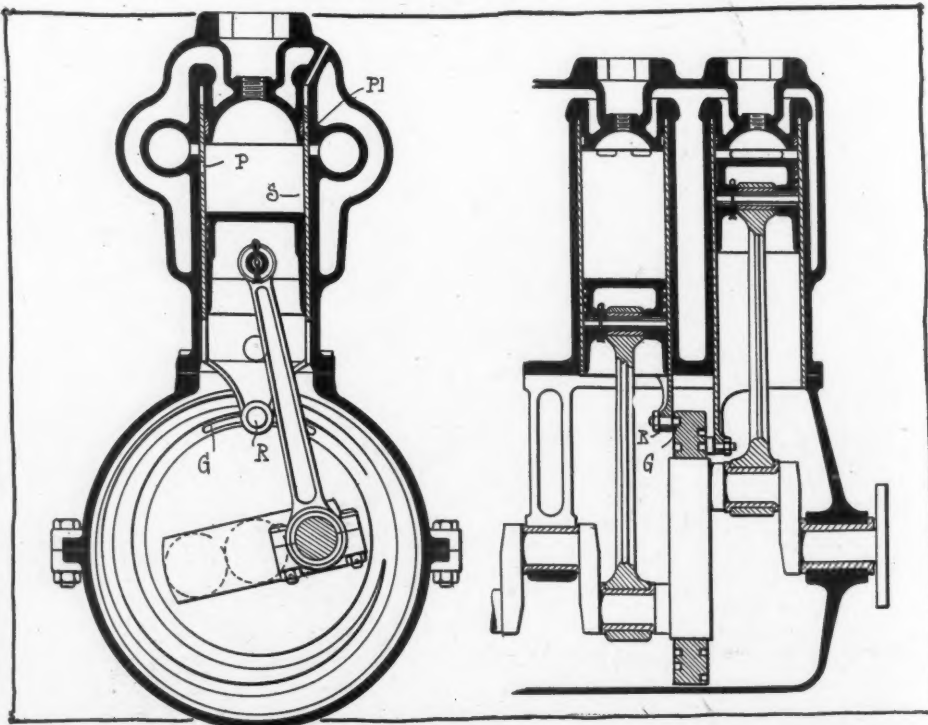


FIG. 4—VERTICAL AND END SECTION OF CHENARD-WALCKER MOTOR

This is a one-sleeve motor, which sleeve has but a vertical reciprocating motion. The novelty of the sleeve is that it is reciprocated by a roller R worked by a cam G, which cam is on a large central disk on the crankshaft. This scheme greatly simplifies motor parts and yet gives most satisfactory results. The illustration in the right half gives a clear concept of the nature of the cam grooves G and how the roller R on the lower end of the sleeve is operated by this cam. The one crankshaft disk serves for two cylinders, and in a four-cylinder motor two of these disks are needed. The careful waterjacketing of the cylinder head cannot be overlooked.



within a certain distance of the bottom of the crankchamber, this distance being accurately determined. The tank is filled with the cock on the outlet pipe in closed position, but the tank being airtight, when the tap is opened the oil cannot run out if the end of the tube is immersed in oil. As the oil level is lowered until the end of the tube is uncovered, air will enter and a flow will be set up until the correct level is again established. As long as there is oil in the dial on the dash the motor cannot suffer, and if there should be an excess flow by reason of air leaks around the filler cap, or elsewhere, this would soon show itself by the motor smoking. For the sake of neatness the lead from the reserve tank to the base of the crankchamber passes through the breather mounted on the rear of the crankchamber. On the Chenard-Walcker, the crankshaft being carried on two bearings only the crankcase is not divided horizontally, but has bolted on end plates. The sump, however, is bolted on, and on being taken away brings with it the oil pump and the fine wire gauze filter running the full length. The bottom of the sump is fitted with fins to assist in cooling the oil, this being a refinement adopted some time ago by makers of very powerful airship motors but not before applied to motors of comparatively low power.

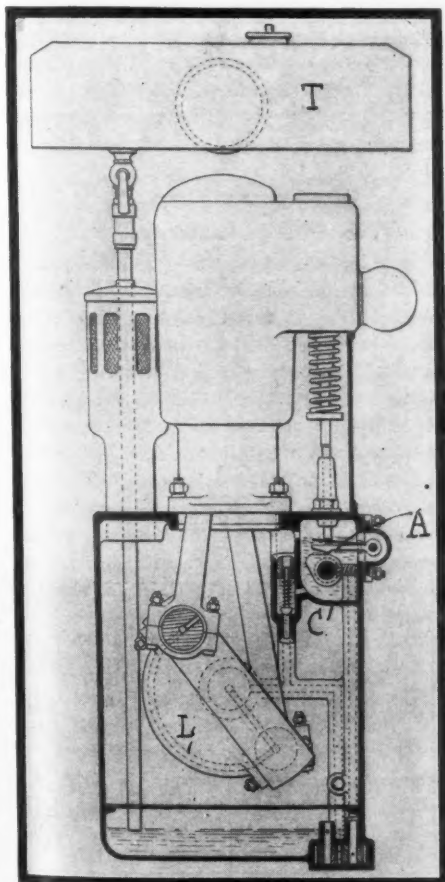


FIG. 5—CHENARD-WALCKER OILING SYSTEM

In this sleeve-valve motor oil is fed under pressure to the main crankshaft bearing and the crankshaft is drilled, but in order to get the oil to the lower connecting rod bearings an arched lead *L*, carried outside of the crankshaft throw, is used.

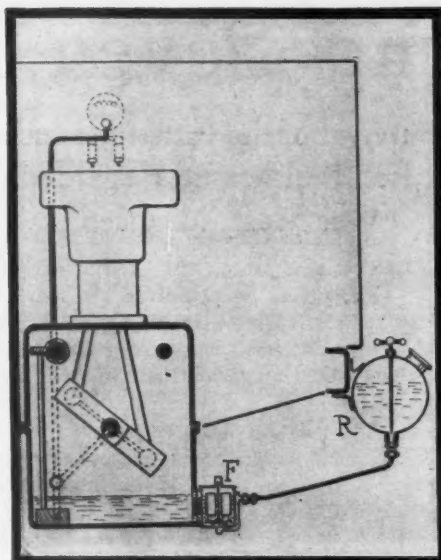


FIG. 6—HISPANO-SUIZA OILING SYSTEM

The supply of oil in the crankcase is maintained at a desired level by a float chamber on the side of the crankcase which regulates the flow of oil from a reservoir carried on the side of the chassis. The float in the chamber *F* acts the same as the float in a carburetor.

Hispano-Suiza has also a distinctive method of automatically maintaining the correct level of oil in the crankcase sump. A reserve supply *R*, Fig. 6, is carried in a tank attached to the side frame in what is known as the old Mercedes manner. On the base of the crankchamber, which is exposed, for there is no protecting under pan, there is a float chamber *F* somewhat similar to the instrument used on a carburetor. Connection is made from the reserve tank to the sump by means of a suitable length of piping, thus the flow is cut off in the same way as gasoline flow is arrested, as soon as the correct level is attained.

In addition a cock is fitted on the reserve oil tank. Sizaire-Naudin has let a glass dial into the face of the crankchamber, with a stout wire soldered across the face of the dial to indicate the height to which the oil should be poured in. Obviously there is no underpan.

Among the detail refinements is the further extension of the system of carrying the gasoline tank either on the front or the rear of the dash. Unic has placed it on the front of all the new models, holding it to the frame by a couple of lugs and a bolt on each side, and to the dashboard by a couple of bolts. As it is sloping upwards from the front to the rear it merges correctly into the curved dash. Doriot, Flandrin and Parent have placed it on the driver's side held by two bolts only, and so fitted that whatever type of body may be employed it can be withdrawn without disturbing anything else.

The tendency is to fit four-speed gearboxes to medium and light powered cars. Panhard has made this change for the 80 by 120 millimeter, 3.54 by 4.72 inches, model, and Unic, D. F. P., Chenard-Walcker and Sautter-Harle have done the same for all their light models.

Since last year no progress has been

made towards the adoption of worm drive. Darraq exhibited it at the last show, but never built any cars with other than bevel drive. Its adoption, therefore, has been confined to England. Hydraulic transmission has received attention, both Renault and Delaunay-Belleville having carried out a considerable amount of experimental work and secured several patents, but its application to standard cars is not for the present.

For small motors—of 80 millimeters, 3.14 inches, bore and less—two-bearing crankshafts are decidedly popular. It is doubtful if they are in the majority, but if they are in the minority it is a really important one. It is equally certain, too, that all the two-bearing crankshafts are not satisfactory; the suppression of the central bearing calls for a shorter and a stiffer shaft and particular attention to the two main bearings. Where properly carried out, however, the motor with a two-bearing shaft is entirely satisfactory and has the advantage of reduced overall length and a slight decrease in weight. Above 80 millimeters, 3.14 inches, bore, three-bearing crankshafts are in the immense majority, five-bearings for four-cylinder motors being found in exceptional cases only. There is an instance in the 3-liter Delage models which are now

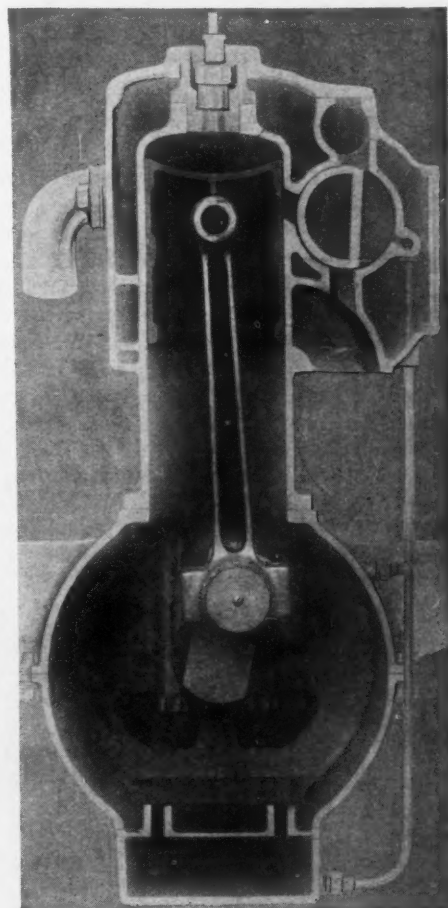


FIG. 7—HENRIOT ROTARY-VALVE MOTOR

This type of motor is being used by the Darraq company. The single D-shaped rotary valve controls both the intake and the exhaust ports, the intake port entering from the top and the exhaust from underneath. A big factor in this valve is that the piston covers the valve opening during the heat of explosion and so protects the valve.

# French Testing Seven Non-Poppets

being produced as exact duplicates of the racing models which won at Boulogne. Here the crankshaft is carried on five ball bearings and the camshafts on three ball bearings. The ball bearings have given entire satisfaction, there being no trouble with them either in the race or on the road since. There is further evidence that Delage is satisfied with ball bearings by the fact that he employs them for the central bearings of his small six-cylinder motors. These cases, however, are really exceptions, the ball bearings being adopted in the one case for greater mechanical efficiency, and in the other in order to save space. On the mass of the cars plain bearings are used for the crankshaft. It is declared that Renault will produce a small motor having a ball-bearing crankshaft, but this will certainly not be offered to the public before 12 months have elapsed. On the whole ball-bearing crankshafts have not made very much progress for stock cars.

The sleeve-valve motor produced by the Lorraine-Dietrich company—or more correctly, patented by it, for there are no indications that it will be immediately offered to the public—consists of a single reciprocating sleeve, having two ports P and P1, Fig. 4, with a reciprocating motion allowing them to alternately cover and uncover the intake and exhaust ports shown in the cylinder walls. The characteristic of this system is that the sleeve is operated by a cam running at the motor speed. It is a method that has been applied to motor construction on several occasions, and notably is at present used on the Gnome rotary aviation motors. The groove G receiving the roller R mounted on the lug forming the base of the sleeve S may either be machined with the crankshaft, or consist of a plate bolted up to the crankshaft. They would be placed between two cylinders, and as the correct groove to secure operation of the sleeve would be cut on each side, only two plates would be necessary for a four-cylinder motor.

## RHODE ISLAND'S SHOWING

Washington, D. C., April 7.—Rhode Island, the smallest state in the union, with an area of only 1,250 miles, ranks first of all the states in its percentage of improved roads, according to the latest figures of the department of agriculture. Thus, apparently, it is not because of its small size that Rhode Island is able to boast of 49.14 per cent of improved roads, for Delaware, with an area of 2,050 square miles, has only 6.22 per cent of improved roads. On the other hand, Massachusetts, with an area of 8,315 square miles, has 49 per cent of its roads improved, or very nearly the same percentage as the little state of Rhode Island.

## Survival of the Fittest Reduces Field—Henriod Regarded as Most Advanced

THERE now are on the French market, or about to be placed on the market after conclusive tests, seven distinct types of non-poppet valve motors, excluding the various modifications of the two-cycle motor which often are referred to as valveless. The most advanced is believed to be the Henriod, adopted by the Darraeq company. After a considerable amount of hesitation, and, it is reported, not a little difficulty in securing a metal for the distributor which would show the correct coefficient of expansion, so as to avoid on the one hand a seizure and on the other the leakage of gas, the decision has been arrived at to specialize on the Henriod type of motor. It has been decided to abandon a recently produced poppet-valve motor and to build two models of the Henriod type having a bore and stroke of respectively 3.7 by 5.5 and 3.1 by 4.7 inches. At present nearly 50 per cent of the firm's output consists of the rotary valve type.

The Reno-Bois or Sphinx motor has been taken up by the Unic—Georges Richard—company and will be produced by that concern in two models for the 1913 season. The engineers appear to be thoroughly satisfied as the results of elaborate bench tests, and now have a number of cars fitted with this motor running under observation on the road.

The Dubois-Rousseau reciprocating sleeve valve motor, as described in a recent issue of Motor Age, will be placed on the French and English markets by the Buchet company within 2 or 3 weeks. The adoption of this motor by Vinot-Deguingand has been practically decided upon, but no date fixed for its presentation to the public.

Doubtless owing to the pending law case the Rolland-Pilain sleeve-valve motor has not been offered to the public, although experiments have been continued, and the motor, it is declared, has given complete satisfaction.

The C. I. D. Co., at Dijon, is producing nothing but non-poppet valve motors, its only model being a four-cylinder of 2.9 by 4.7 inches bore and stroke. The motor has a rotating split-ring distributor, driven by a vertical spindle and overhead mechanism. Produced 2 years ago by the Cottureau company, this motor has been in constant use ever since. The patent rights were secured by the C. I. D. company when this firm succeeded the Cottureau, and various detail improvements introduced. Three of the C. I. D. cars have taken part in the tour of France competition, one of the motors having covered a distance of 16,000 miles before starting on the 3,000-mile official test.

The C. L. C. rotary sleeve motor also is being produced commercially, but only in small quantities, the firm at the back of it having limited financial resources. Probably not more than a dozen of these cars are in the hands of private owners. Leonce Girardot, one of the partners in the old C. G. V. company, also has a non-poppet valve motor which has undergone its tests and will be offered to the public during the present season.

In addition to these seven, a large amount of experimental work has been done by Louis Renault, several motors having been built and numerous patents taken out, without, however, any decision being arrived at towards the abolition of the poppet-valve type. Bayard-Clement also has looked very closely into this matter with the aid of an engineer for a long time connected with Henriod on the production of the type of motor adopted by Darraeq. In this case, also the poppet valve has not been disturbed. Berliet has carried out experiments with a reciprocating sleeve motor, without any practical results.

Doriot, Flandrin & Parent, specializing on light and medium powered cars, have a non-poppet valve system under test, and the Gnome company, famous for its rotary aeroplane motors, has attempted to solve the problem of a substitute for poppet valves. This list deals only with French firms having actually built and experimented non-poppet valve types of motors, to the exclusion of those having confined their efforts to paper.

## OVERLAND FOREIGN SHIPMENTS

Toledo, O., April 6.—Another foreign shipment of thirty Overland motor cars has left Toledo for Australia. This makes the second shipment to the antipodes since March 10, making the total this month of seventy-five cars. The Overlands will be shipped from Seattle to Melbourne and Sydney, from which cities they will be distributed throughout the island. The prior shipment on March 10 was made from New York. The Overland agents in Australia have recently increased their original allotment of 700 cars to 1,200 for the 1912 season.

## BIG YEAR IN EXPORTS

Washington, D. C., April 7.—For the fiscal year now approaching its close the total exports of motor cars and parts will approximate, if not exceed, \$25,000,000 in value. The imports of cars and parts are expected to reach a value of \$2,500,000. The import figure for 1912 will be much less than that of the fiscal year 1907, when the total was nearly \$5,000,000, thus indicating a marked decline in recent years in importations, though the growth of exportations during the same period has been very large.



# Manufacturers' Communications

## MOTOR TRUCK GUARANTEES

[ IMA, O.—Editor Motor Age—Today the buyer of a motor truck has every advantage in the way of guarantees. The present extremely high costs of motor truck manufacture are brought about largely by the unreasonable demands made by owners and operators. This, of course, is not applicable to all users, for there have always been some reasonable operators, and many are beginning to realize the advantages to be derived from dealing with the truck manufacturer who is producing a first-class truck and who, by good business methods, is making a fair return on his investment and will, therefore, stay in business. They can see how a short-time guarantee by this maker is better than a guarantee of 2, 5, or 7 years by less conservative, conscientious and business-like makers.

No first-class manufacturer of motor trucks will refuse to replace a defective part, if that part be sent to him for inspection, irrespective of any guarantee he may have placed on it.

The commercial vehicle convention in March, after careful consideration of the situation, recommended a 90-day guarantee. This does not mean that no maker will replace any defective part which may show up 6 months after delivery, but was adopted for the protection of the manufacturer against unscrupulous users. The time will come when guarantees will be eliminated as unnecessary. Until then, the manufacturer should insist upon the user paying at least, for his education, instead of himself continually standing the brunt of it and paying for it.

Experience has shown that one of the great troubles has been to convince the buyer of the type of truck he should purchase. If a study of his business showed conclusively to the manufacturer that the buyer should install 2-ton trucks and the buyer absolutely insisted that 1-ton trucks were of ample size, the manufacturer rather than lose the business, has sold them, with disastrous results. The blame for all failures was invariably placed upon the manufacturer. The user claimed that the trucks were too light and would not stand the work, when the truth is they were overloaded. Had he installed the heavier model, the user would have had satisfaction from the start.

The manufacturer lays down certain rules of proper care, and specifies carrying capacities and maximum speed limits, which if exceeded will result in withdrawal of the guarantee. No attention is paid to these, but if the manufacturer does not help the user out of trouble he has gotten himself into he threatens to trade his trucks for some other make. To the

## B. A. Gramm Points Out the Duties of Consumer and Seller—Oil Recommendations

serious detriment of the truck industry at the present time, too many manufacturers are abetting this sort of thing.

Some of the highest costs of truck manufacture are brought about because the truck maker has not only to provide the finished truck, but must bear all the burden of expense in teaching the operators, oftentimes even providing the drivers. He must either become an expert on transportation, or hire one and furnish his services free of cost to the customer, who wants an insurance against any possible loss and asks for all sorts of guarantees which are absurd on their faces and which he does not get in any other line of business.

Now, why should not the purchaser, who is to be the great gainer, be willing to pay at least for his education? There is nothing that can be done by horses in merchandise delivery that cannot be done faster and more economically by motor trucks, but as the trucks should be handled and treated in a different way from horses, the motor truck manufacturer should certainly be protected if the purchaser insists on handling the truck his own way. Every truck maker who is giving long-time guarantees is, I am convinced, showing a weakness in his product, because his policy proves that he is selling his machines on promises and not on their quality.

Speed governors should be installed on all trucks. It is important that they should be accurate and really govern, holding the number of revolutions of the motor down to a certain given point. However, the governor will not control a truck coasting down long grades, and it can often be tampered with by experts without the knowledge of the manufacturer. To overcome this, every truck should be equipped with a speedometer that has a maximum hand or a recorder, which should be sealed or locked and the key kept by the owner. This will show the highest speed attained at any time with the truck. If a fine were charged against the driver for exceeding a certain speed limit, and dismissal were to follow the second fine, 90 per cent of the present truck troubles



would disappear. The song that was written several years ago, entitled "It is not the miles we travel but the pace that kills," should be applied to motor trucks and sung all over the land.

Last of all, tire manufacturers should take an absolute stand against overloading and report every case that comes to their attention to the owner of the truck and to the manufacturer. Above all, they should insist on the use of tires of sufficient size for the load capacity, which they can back up with their guarantees, but they should be perfectly impartial to all truck manufacturers and not give one an advantage over others, which, at the present time, they are doing in many cases.

Every assistance should be given the National Association of Automobile Manufacturers that is devoting so much time to the motor truck industry in an effort to establish a perfectly equitable basis on which to do business.—B. A. Gramm, vice-president and general manager, Gramm Motor Truck Co.

## OIL FOR VARIOUS CARS

New York—Editor Motor Age—In response to many inquiries as to the best grade of oil to use for certain makes of motor car engines, we have prepared the following table, which applies under normal conditions:

### LIGHT OIL

Apperson, Austin, Chalmers, Cole, Columbia, water-cooled Corbin, Crow, Elmore, Flanders, Garford, Hudson, Kline, La France, Locomobile, Lozler, Matheson, Mercedes, Mercer, Oldsmobile six, Pope-Hartford, Peerless, Studebaker, Thomas Flyer, Stoddard-Dayton, Winton

### MEDIUM OIL

Abbott-Detroit, Acme, Aerocar, American, Amplex, Anhut, four-cylinder Autocar, Benz, Bergdoll, Berlet, Black Crow, Buick, C. G. V., four-cylinder Cadillac, Cartcar, Cleveland, Coates-Goshen, Crawford, Daimler, Delahaye, Dorris, E-M-F, Empire, Enger, Everitt, Fairbanks, Firestone-Columbus, Franklin, Frontenac, Gaeth, Gearless, Glide, Grabowsky, Great Smith, Halladay, Hart-Kraft, Herreshoff, Hotchkiss, Imperial, Inter-State, Isotta, four-cylinder Jackson, Kisselkar, Knox, Koehler, Krit, Lion, Marlon, McFarlan, McIntyre, Middleby, Midland, Mitchell, Moline, Moon, Mora, Napier, National, Northern, Oakland, Ohio, four-cylinder Oldsmobile, Overland, Palmer-Singer, Panhard, Parry, Paterson, Pennsylvania, Petrel, Pope-Toledo, Pullman, Queen, Rainier, Rambler, Rapid, R. C. H., Regal, Reliance, Reo, Rider-Lewis, Royal Tourist, Sampson, Schacht, Selden, Simplex, Staver, Speedwell, Velle, Warren-Detroit, Wayne, Welch, White, Westinghouse.

### HEAVY OIL

Bianchi, Brasler, two-cylinder Cadillac, Chadwick, Clement-Bayard, Croxton-Keeton, Darracq, de Dietrich, de Dion, Delaunay-Belleville, Rochet-Schneider, Flat, Frayer-Miller, Hewitt, two-cylinder Jackson, Jenkins, Renault, Lambert, Lancia, Leon Bollee, Mack, Nance.

### EXTRA HEAVY OIL

Two-cylinder Autocar, Cameron, Chase, air-cooled Corbin.

### LIGHT OR MEDIUM OIL

Alco, Allen-Kingston, American Mors, Atlas, Brush, Ford, Haynes, Hupmobile, Lexington, Marmon, Maxwell, Paige-Detroit, Stearns-Knight.

### MEDIUM OR HEAVY OIL

Auburn, Babcock, S. G. V.

### MISCELLANEOUS

Pierce-Arrow, Packard, Stevens-Duryea, Sultan, Metz and Waltham-Orient.

—Havoline Oil Co.

## Adjusting Steering Gear

**Hoosier Shown Method of Taking up Wear in Steering Mechanism and Push Rods**

**H**UNTINGBURG, Ind.—Editor Motor Age—1—I have the worm-gear steering apparatus and the wheel can be turned a quarter of a turn before the wheels move. I have taken the gear apart but cannot see anything worn about it.

2—When the engine is running very slowly there is an awful knock that seems to be in the crankcase. Could there be such a thing as the crankshaft coming apart and what would be the danger?

3—Can the valves of a 1900 E-M-F car be adjusted, and if so, how?

4—Our E-M-F weighs 2200 pounds, what size tire is most suitable for it?

5—When the car is run just a short distance the engine gets so hot that I cannot touch the radiator. After running a few miles the water will begin to boil and consequently will all boil out of the radiator. What is the cause of this?—Cecil Blemker.

1—It is probable that if you follow out the method of adjustment outlined below the looseness will be taken up. The steering gear is illustrated in Fig. 4. To adjust this type of steering mechanism, loosen the clamping stud bolt B and turn up on the cap C until the thrust washer W is brought into contact with the end of the shaft T; then fasten the stud bolt B again securely. It hardly is possible that the bushings H and H1 are already worn, or that there is lost motion in the gears due to wear of the sector S; but should you be unable to remove the excessive play by means of the adjustment above mentioned and you are sure that the play exists between the steering wheel above and the steering arm below, then it might be well to have the mechanism removed from the chassis, disassembled, thoroughly inspected and all worn parts readjusted or replaced. It is possible that the lost motion is not in the gear itself, but in the linkage between it and the wheels.

2—Possibly the crankcase bolts are loosening. If the bolts are loose enough to cause the "awful thump" on slow speed there is grave danger of cracking the crankcase. Usually, the thump can be heard at high speed as well as when the engine is running slowly. It is not safe to run the engine before the cause of the thump is located and removed.

3—Yes, the adjustment is shown in Fig. 1. The rod A is bored and tapped at its upper end and a bolt with a hexagon head C screws into it. The head has a fiber insert D to prevent noise. The rod can thus be lengthened by screwing C out which is locked in place by the lock-nut B. The hole shown in the stem is provided for the insertion of a nail or wire for holding the rod when adjusting.

4—Tires 32 by 3½ inches should be used.

5—There are several things which might



# The Readers'

**Method of Lengthening Valve Pushrods on E-M-F—How Loose Steering Connections Are Tightened—Casings With Extra Thick Sides Wanted in West**

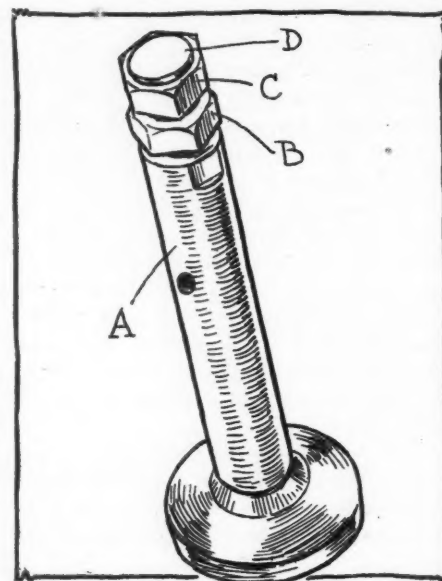


FIG. 1—ADJUSTMENT OF E-M-F PUSHROD

cause the excessive overheating of the motor. The most likely one of these is a thick deposit of sediment on the walls of the waterjackets, and in the radiator. This can be removed by cleaning out with a saturated solution of soda. Dissolve common washing soda crystals in warm water until the water will dissolve no more. Drain the present water from the cooling system and fill up with the solution, run the motor 2 hours, drain out the solution, flush out with clean water and then refill with clean water. Another possible cause of the overheating is an excessive deposit of carbon in the cylinder, another is that the spark is set too late. It is possible also that the exhaust valve opens too late.

### EFFECT OF TOEING IN OF WHEELS

Denver, Colo.—Editor Motor Age—Please advise if it is necessary that the front wheels of a motor car toe in any at all and, if so, how much, and why it is necessary. Also, is it not a fact that if the front wheels are not in perfect alignment with the rear wheels an undue wearing of the treads of the front tires will result?—H. L. Althen.

Most makers arrange to have the front wheels toe in from ¼ to ½ inch. It is found to make steering easier. It is true that having the front wheels out of alignment with the rear causes wear of the tires, but in this case the difference is so little as to have slight effect.

## Tires and Protectors

**Special Type of Tires Suggested for Use on Prairie Roads—Larger Size Advised**

**W**INNER, S. D.—Editor Motor Age—I have a model 17 Buick that uses 34 by 4-inch tires and the car weighs, completely equipped, about 3,100 pounds. The roads in this part of the country are for the most part hard, as the soil is clay or gumbo. When this soil dries after a rain the ruts are almost as hard as if they were frozen and the roads literally eat rubber. The tires in this country give out on the sides before they do on the tread because of these ruts. Can Motor Age give any information as to whether inner liners or tire protectors would aid materially in or on a 4-inch casing or would I get better results by putting on 35 by 4½-inch casings.

I believe that if some reputable tire company would build a tire with more rubber on the sides of the casings than is now put on that there would be very great demand for them in just such countries as this.—James E. Thomas.

There has been a great deal of discussion in these columns as to the merits of tire protectors and inner liners. Some of the readers have found that the life of a tire has been materially increased by their use, while others believe that the tires were ruined by them. It is probable that with tire protectors of high grade correctly fitted to the tires so there will be no creeping the life of a casing will be lengthened. As to substituting 35 by 4½-inch casing for 34 by 4-inch tires, this will certainly make your tires last longer and is to be advised, providing the motor develops plenty of power. The effect of putting on larger tires is to decrease the gear ratio and thus slightly decrease the pulling power of the motor, at the same time increasing the speed of the car.

Makers of tires have designed them so that they will have the greatest strength as a whole and to overbalance the tire construction by putting more rubber on the sides of the casing would tend to shorten the life of the rest of the case unless the latter were built up in proportion. If the tires are of the correct size and properly inflated, the wear will not be excessive on the sides, even on prairie roads.



# Clearing House

How to Make the King Split Log Drag for Highway Grading—Silvering Searchlight Reflectors—Effect of Oil on Celluloid—Cause of Water in Exhaust

## Resilvering of Reflectors

### Operation of Renewing Reflecting Surfaces on Headlights Not Always Successful

ALBANY, Mo.—Editor Motor Age—Please tell of some good preparation for silvering the parabolic reflector used for the electric headlight on my car.—A Subscriber.

First remove all signs of the previous silvering. This is best done by laying the reflector on a block with the face side up and driving nails around it so that the heads clamp down on its edge. Then use very fine emery cloth and be careful not to scratch the metal backing. Then melt together 2 ounces of lead, 4 ounces of bismuth and 2 ounces of tin. When this has reached the boiling point of water, stir in 8 ounces of mercury. While the mixture is warm, apply it to the reflector with a smooth brush, and when it has cooled down sufficiently rub to a polish with a woolen rag. The results obtained in this way are not uniformly as good as would be obtained by sending the reflector to a professional, for the amateur lacks

the skill, tools and equipment to do the work as well as will a professional.

Any good soft polish such as is used for silverware will give the reflector a good smooth surface and is also the best for polishing reflectors that have become tarnished.

### OIL EFFECT ON CELLULOID

Lexington, Miss.—Editor Motor Age—1—What effect does oil have on celluloid?

2—There is a bull's-eye sight oil feed on the dash of my car that had a glass in it about the size of a half-dollar. It was broken and I had it replaced with celluloid. Will it serve the purpose for any length of time?—Hal A. Gilliam.

1 and 2—It is claimed that ordinary cylinder oil does not affect celluloid; but also it is a well known fact that benzine is a solvent of celluloid, and as both benzine and cylinder oil are products of crude petroleum and closely related as far as their chemical constituents are concerned, it is reasonable to relieve that in time the cylinder oil would tend to soften the celluloid and cause a leakage of oil around the edges. Motor Age would suggest that you proceed with the experiment, however.

## Making Split Log Drag

### Construction of D. Ward King's Device for Improving Roads Is Clearly Described

BEDFORD, Ind.—Would like a description and illustration showing how to make a split-log drag.—E. B. Thornton.

An article on the construction and use of the split-log drag was printed in Motor Age for January 12, 1911, a digest of which is given below:

A split-log drag is a simple thing to build, and because of its simplicity some people have no faith in it. With a drag properly built you will soon learn to use it so as to get the best results. Don't make your drag too heavy, for it is a one-man machine and you will have to lift it once in a while. A light drag will respond quicker to the shifting positions of the operator. Elm, box elder or soft maple make the best. It is illustrated in Fig. 2. The log should be 8 feet long and 8 to 10 inches in diameter, split as near the center as possible, and use the heaviest and best slab in front. Four inches from the end that is to travel in the middle of the road bore a 2-inch auger hole A1; in the middle of the face of the slab 22 inches from the ditch end bore another 2-inch hole A3; half way between these two holes bore one more A2. Be sure they are all in line and in the middle of the slab.

Now bring up your rear slab and let the ditch end overlap the hole A3 in the front slab about 6 inches; this will leave the ditch end of front slab about 16 inches nearer the ditch than the rear slab when joined together. Mark and bore three holes in the rear slab and you are ready for the stakes. Use stakes 2½ inches in diameter. Shave the ends of them down to fit the holes in the slab. Have the slabs 30 inches apart and wedge your stakes. Saw the stakes off flush with face of the front slab and let them project about 4 inches back of the rear one. These will be handy in handling the drag.

Before you drive on the rear slab arrange a brace B. This should be fitted in a notch cut out in the ditch end of the front slab about 3 inches from the end and bracketed against the stake where it goes into the rear slab. Fit the brace, drive on the rear slab and you have got it. Next bore a 1½-inch hole H 2 inches from the ditch end of the front slab and in the center. Secure a trace chain of regulation length and 10 feet of No. 9 wire. Pass the wire around the stake A. Pass the wire around the stake twice and twice through the ring on end of trace chain; then tie. Pass the fore end of the chain through the hole H and drop an old bolt in the link. Now take hold of the chain and pull your drag in shape so that the front and rear slabs track. Cut a link in the chain and put in a split link L about 12 inches towards ditch end. Put in another split link L1. These links should be

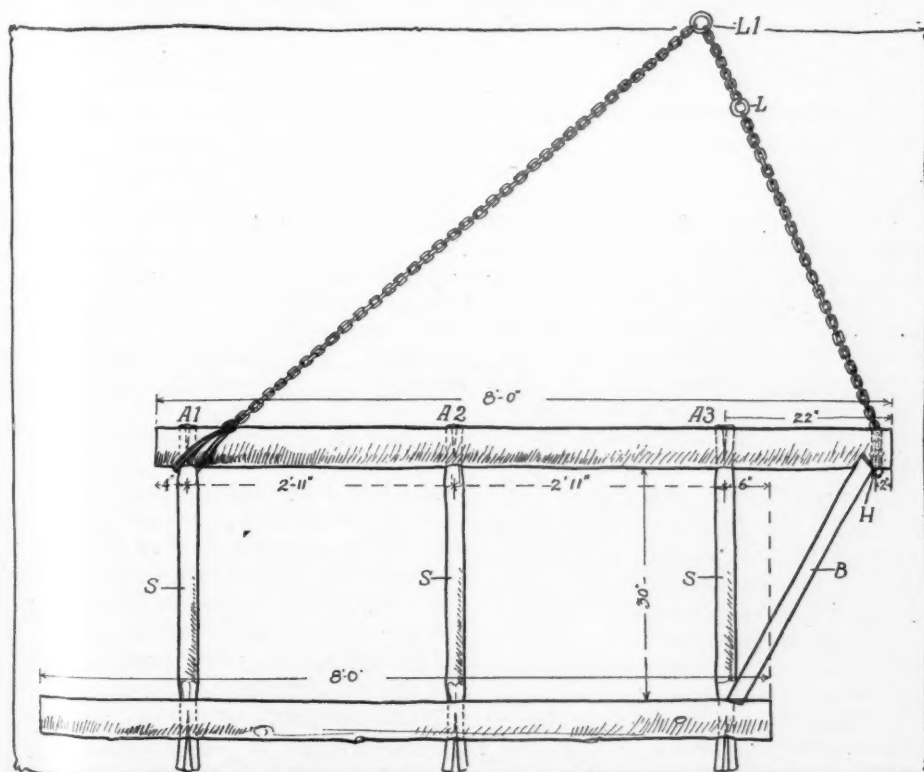


FIG. 2—METHOD OF CONSTRUCTION OF SPLIT-LOG DRAG

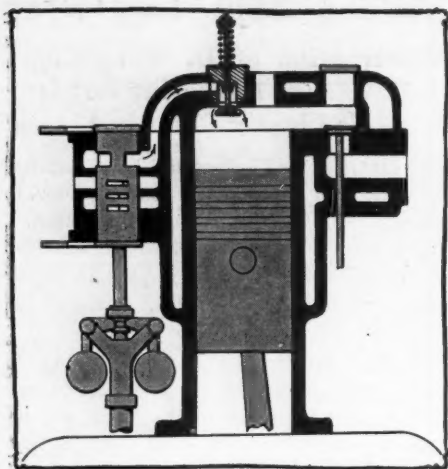


FIG. 3—DESIGN OF GOVERNOR

large enough to work your doubletree clevis in. A slight change in the length of the chain will make the drag cut deep or shallow as desired.

#### PROBABLY LEAKY JACKET

Oak Grove, Ala.—Editor Motor Age—I have just gotten a new car and I cannot get the motor to run smoothly, although I have adjusted the carburetor in every possible way. I have the car in a house with a new plank floor, and I notice after running the motor a few minutes there will be quite a good bit of water standing on the floor that was discharged from the exhaust pipe. The water from the radiator goes through the intake manifold. Does Motor Age think water could get into the cylinders from that source? I strain the gasoline through chamois skin, and do not think it could get in that way.—G. B. Willis.

From your description of the trouble it seems probable that there is a leak in the cylinder casting which permits water from the waterjacket to seep through either into the intake manifold or the cylinder itself. It is suggested that you take the matter up with the manufacturers of this car, and if the fault is in the casting you will get an adjustment.

#### THINKS TIRE PROTECTORS HARMFUL

Burton View, Ill.—Editor Motor Age—In the issue of March 21 of Motor Age I see that F. J. Stillman of Riceville, Ia., is seeking information on tire protectors. Wishing to prolong the life of my tires I bought a pair of steel-studded tire protectors and put them on the rear wheels of my car. After using them for about 2 months I had a blowout and when I took the protectors off I found the outer casings literally covered with blisters caused by the friction of the clinchers of the steel studs upon the outer casing. The result was that I had to buy a new pair of outer casings. I firmly believe that if I had not put the protectors on I could have used the old casings as long again.—E. E. Sisson.

It seems probable that the disastrous friction was due to improper application of the protectors or to not having the

## Much Care Necessary in Tire Repair

### Condition of Fabric Most Important Factor in Decision as to Value of Renewal—Process of Applying Heat Important

PRINCETON, Ind.—Editor Motor Age—

The first and important feature to notice in tire repairing is the condition of the fabric, whether or not it is in a condition to permit a practical repair being made. If, however, it is in a poor state and not of sufficient tensile strength to maintain the air pressure necessary, the repair should not be attempted. Since the fabric is the life of the tire, the part wherein all dependence is placed to withstand the strain imparted to it by the various road conditions plus the necessary pressure of air to give it pneumatic resistance, it should be the first in consideration and should not be damaged in any degree through the repair operations, and all possible caution should be used to prevent its destruction. This being true, a good coating or tread is necessary to protect it.

However, the tread, which is its protection, should then be a careful consideration, and since rubber is the only satisfactory agent for this purpose it is necessary to place it in its proper position while

in a raw state, then proceed with the operation of placing the raw or uncured stock under pressure so as to render it in a compact form after it is cured. Pressure properly applied aids in curing to some extent, as the sulphur is more readily expelled. Also, the cured stock will have more tensile strength and afford a better protection to the fabric; and if it is properly applied in section work, affords a thickness of parts repaired uniform with that of the original tire, thus allowing the repaired parts to be as flexible throughout as the former stock, leaving the repair free to absorb its portion of the shocks and eliminating the common occurrence of breaks at the end of the section. It aids in making the laps adhere more compactly and closely, giving to the repair more strength. Pressure is very essential.

Then comes the process of applying the heat, which also must be an important feature, to give the best results. The cover or coating should be gradually heated, enabling all parts to come to a vulcanizing temperature at the same time,

tires inflated enough. Such an aggravated case as this can hardly be laid entirely to the protectors—although only an examination would tell definitely.

#### MOTOR CAR ELECTRIC LIGHTING

Burton View, Ill.—Editor Motor Age—Do electric lights on a motor car give good satisfaction?

2—What size lamps are generally used for a light-weight touring car?

3—What size storage battery would I need?

4—Would a low-tension magneto keep this battery charged?—Subscriber.

1—Yes, if correctly installed with ample battery capacity.

2—Ten-inch headlights, 16-candlepower tungsten filament lamps in headlights and 6-candlepower in side and tail lamps.

3—For headlights, sidelights and tail-lights use 100 ampere hour lighting battery.

4—A magneto cannot be used to charge the storage battery, as the magneto delivers alternating current, while the battery must be charged on direct current.

#### TWO TYPES OF GOVERNORS

Parkston, S. D.—Editor Motor Age—1—What is the advantage of a hit-and-miss governor over the throttling governor on a stationary gasoline engine?

2—And what is the advantage of a throttling governor over a hit-and-miss on the above?

3—Please give a drawing and description of a simple throttling governor for a stationary engine.—E. J. Mueller.

1—The advantage of the hit-and-miss

governor is that during the idle strokes the cylinder is flushed out by the scavenging charge of air, which makes the next explosion more powerful, and assists in keeping the engine cool.

2—With the throttling governor, the strength of the mixture is always constant though its quantity is varied. This permits a perfect adjustment of the work done in each cylinder at each cycle and gives a uniform speed. This method does not have the racking effect on the moving parts that is caused by the missed explosions of the former method.

3—The throttling governor used on one type of the Westinghouse stationary engines is illustrated in Fig. 3.

Gas from the passage G enters a port in the cylindrical valve A and meets air which enters from D through similar ports. The mixture passes out of the valve through a large port near the top and goes through C to the cylinder when the inlet valve D is open. The relative amounts of gas and air are regulated by the two levers H H, which are connected to shells inside the valve A and which can rotate them so as to cover up more or less the gas and air ports. The actual amount of the mixture entering the cylinder is controlled by the governor B, which works an internal cylindrical valve in such way as to throttle the discharge port of the valve A when the speed increases.

#### VELIE GEARSET

Marshalltown, Ia.—Editor Motor Age—

1—Did the Velie car ever have the gearset integral with the differential housing?



## Advantage of Uniform Cure in Tread Dispenses With Cracked Treads and Blowouts from Uncured Beads—Dry Heat a Requisite—Plea for Discussion

so as to give a uniform cure throughout, affording the cushion stock a proper constituency. This enables it to hold the tread in its proper position while absorbing the shocks brought to bear on it and eliminates the sand blisters and loose treads. Again, it dispenses with cracked treads due to unequal and sudden applications of the heat, and at the same time thoroughly cures beads and avoids blowouts at this place by uncured bead stock, which when the tire gets warm gives away to the pressure of the air.

Besides giving the rubber the best ductile and elastic consistency to give the most satisfactory results such as compactness, uniform thickness, uniform consistency of the cement and tread stocks, we must do the fabric no harm. To do this, the heat must be perfectly dry and of the proper temperature, 278 degrees, and timed according to the depth of stock to be cured. No steam should be present to collect the dispersed sulphuric gas, which is driven from the rubber by the heat and deposited in the fissures of the fabric in

the form of sulphuric acid. This deposit is due to the condensing of the steam in cooling and destroys the strength of the fabric, which gives way in a short time through inability to sustain the pressure. These are some of the important features which are confronting the tire repair world today and are overlooked by many repair men.

I think the tire men should have a meeting and discuss the properties of rubber and the curing of it and be capable of doing a better class of work, which in turn will build a more profitable business for each and bring many a dissatisfied person back to them. We can't learn too much about this work, as most every other vocation, with perhaps not so great a demand and opportunity, has a means of exchanging ideas and hearing its subjects debated. Why should the tire men be so dull in regard to this? We can profit by your experience. Why not help yourself along by helping others to attain a more practical and prosperous position?—A. C. Hopkins.

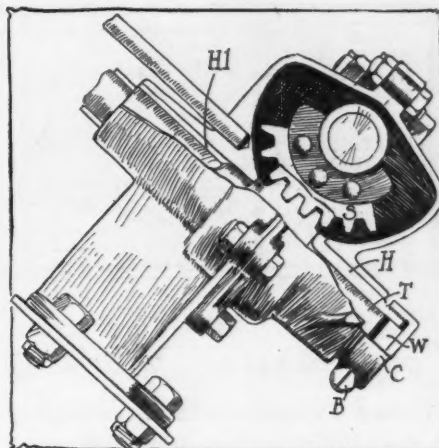


FIG. 4—ADJUSTMENT OF STEERING GEAR

second cylinders. The engine misses the same when running slow and when running fast. The magneto is in good condition.—M. L. Downing.

The most reasonable supposition is that there is a leak past the piston in the third and fourth cylinders, although your statement that the compression seems good on all would be against this. If there is any difference in the missing between low speed and high speed, that is, if it misses more on low than on high, the indication would be an air leak in the intake manifold of these two cylinders. It is possible that either the exhaust or intake valve are not seating properly and it would be well to have the intake valve ground and both intake and exhaust examined to see that the stems are not warped or sticking. It is presupposed, of course, that you get as good a spark in these two cylinders as on the others on the magneto.

### ADVANTAGE OF FLOATING AXLE

Vicksburg, Miss.—Editor Motor Age—Kindly state whether there is any advantage in a floating axle over the semi-floating variety used on motor cars. I notice that high-grade machines are equipped with the floating axle, and hence assume that it must be regarded as superior to the semi-floating axle.—S. R. Martin.

The chief advantage of a floating type of rear axle is that the entire working portion can be removed without disturbing the wheel adjustments in any way, it being simply necessary to remove the transverse driving shafts so that they clear the squared sockets or other means of connection in the differential mechanism, and bevel gear; then remove the cover of the bevel gear and differential case and loosen the bearing caps which hold these mechanisms in place. In the semi-floating type of rear axle it is necessary to jack up the rear end of the car disconnect the springs from the axle casing and then almost entirely disassemble the rear axle mechanism in order to make any repairs on the differential gearing. The semi-floating type of rear axle is quite a simple construction, however, and it is claimed, has advantages over the floating type in the way of manufacture.

2—In what way does the storage battery on the 1912 Cadillac, used for lighting and self-starting purposes, differ from other storage batteries, and why will it not freeze and become ruined the same as an ordinary battery?—A Reader.

1—No; but the Velie Junior model for 1913 will have its gearset mechanism encased in unit with the rear axle.

2—The battery used in connecting with the electric ignition lighting and starting system of the Cadillac car is made by the Exide company and differs from the ordinary Exide battery only in that it has but three plates per cell, and its connections are so arranged as to give the required electrical output. The battery consists of twelve cells, arranged in four groups of three cells each. Each group gives 6 volts, and for charging and lighting the four groups are connected in parallel, giving a lighting battery of 80 ampere-hours. When connected in series for starting, a battery of 24 volts and 20 ampere-hours capacity is obtained. Like all other batteries, it will not freeze at ordinary low temperatures because of the anti-freezing properties of the electrolyte or acid. It also is less liable to freeze than other batteries, because it always is fully charged, and will not freeze as readily as a partially discharged one.

### MASTER VIBRATOR AND DELCO RELAY

Atwater, Minn.—Editor Motor Age—I would like to find out if the K-W master vibrator for Ford cars, and Delco relay for the same, are one and the same. If there is any difference, what is it?

2—What seems to give the best results when lights are taken from the magneto for Ford cars?

3—Which is easiest on tires—underslung or overslung frames?—A Subscriber.

1—No; the two instruments you mention are not the same. The master vibrator is simply a single vibrator coil which takes the place of the four separate vibrators on the dash coil. The Delco relay replaces the individual vibrators just the same as does the master vibrator, but differs from it in that it uses but one spark for each contact with the commutator.

2—These systems give equally good results when lights are taken from the magneto because the ignition, which is controlled by the relay in the one case and the master vibrator in the other, is distinct from the lighting except that both ignition and lighting receive their current from the same source.

3—Opinion is divided as to whether the overhung or underslung frame is the easier on tires. There is little difference between the two constructions in this respect.

### A MYSTERIOUS MISS

Rockford, Ohio—Editor Motor Age—I have a Maxwell model Q-11 22-horsepower. It ran nicely for 6,000 miles, then it began to miss occasionally, gradually getting worse. The ignition is all right, the exhaust valves have been ground in and the cylinders cleaned. The compression seems good on all the cylinders. Power on the third and fourth cylinders is weak and waning, the power is good on the first and

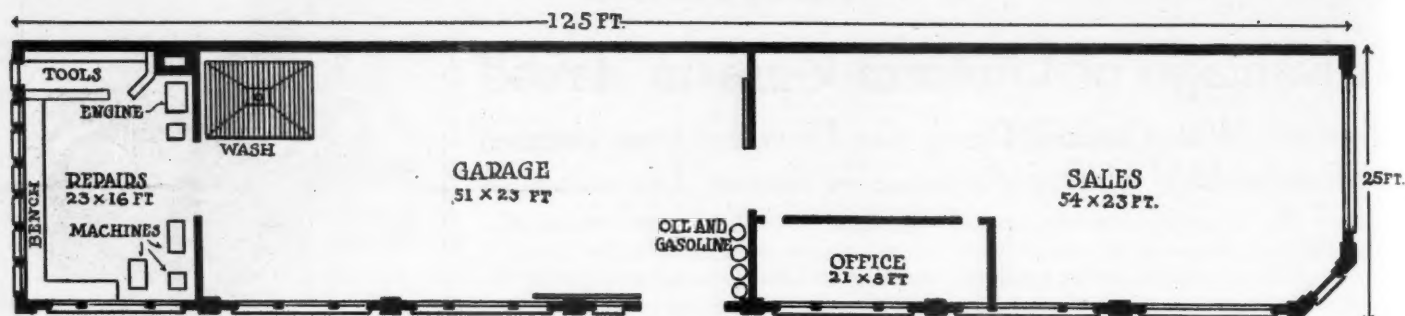


FIG. 5—PLAN OF 125-FOOT BUILDING FOR GARAGE AND SALESROOM

## Ford Master Vibrator

### Wiring Synchronous Interrupter and Electric Headlights from the Flywheel Magneto

CHICAGO, Ill.—Editor Motor Age—I have a Ford model T equipped with Vesta electric headlights from the magneto. Having heard so many good things said of a master vibrator I got one, but in connecting it up my lights would not work, and I had considerable difficulty in finding someone who could solve the trouble. I finally ran my headlight wire direct to the magneto instead of the coil plug, then ran a wire from the master vibrator to the magneto and another to the coil plug, which seems to work. Kindly let me know if this is the correct way of wiring the headlights when a vibrator is used. I would like to see a diagram of the correct manner of wiring with the master vibrator and believe it would be of benefit to others. Would the lights take more power when wired direct to the magneto than they do when wired to the coil plug, or in any way detract from the magneto.—O. G. Brown.

The lighting wire may be run from either one of two points. It may be connected direct to the magneto terminal, just as the wire from the master vibrator to the magneto is connected, or it may be connected to the master vibrator at the connection of the wire from the magneto as shown in Fig. 7. In this illustration connection for both lamps and master vibrator are shown and there also is indicated the wiring for dry cells or storage battery as well. If, as is usual in these cars, the batteries are omitted, the connection at B is left open. At A is shown the way in which the vibrators of the individual coils should be short-circuited when the master vibrator is installed. It makes no difference as to which end of the wire between the master vibrator and magneto the lighting wire is connected.

### TWO MASTER VIBRATOR INQUIRIES

Hazleton, N. Dak.—Editor Motor Age—Can a master vibrator be used on a model T. Ford? What changes have to be made to put one on?—A Reader.

The wiring of a master vibrator in a Ford is illustrated in Fig. 7. This also shows the connections for lighting the headlights on the magneto. If the latter is

not desired it is only necessary to omit the connection to the lights at M. Where, as is usual in Ford cars, the battery is not employed, the connection at B is omitted. The vibrators of the four coils must be short-circuited as shown at A.

West Monterey, Pa.—Editor Motor Age—Would it increase the power of the motor on a Ford car if I would put a master vibrator on the four-unit coil?

2—Would the unit that had been used for 1500 miles give good satisfaction with the master vibrator, or would Motor Age advise getting new ones?

3—Please give me some information on the ignition system used on the 1912 E-M-F 30. Please give a diagram if possible.

4—Please give the gear ratio of the 1912 E-M-F 30 on the different speeds.

5—Are not the majority of the self-starters injurious to the motor?—B. V. Barger.

1—If the individual vibrators on the four-unit coil are correctly adjusted and in good working condition it would not affect the power of the motor to install a master vibrator. The advantage of a master vibrator is that when it is correctly adjusted the spark in all the cylinders is the same, something that is very difficult to obtain with four separate vibrators. The ease and certainty of correct adjustment is the chief recommendation for the master vibrator.

2—If these units are working satisfactorily there is no reason for changing them when installing a master vibrator.

3—A Splitdorf dual ignition system such as employed on the E-M-F is illustrated

and described on page 26 of the issue of Motor Age for February 22, 1912.

4—The gear ratio of this car on direct drive is  $3\frac{1}{4}$  to 1. The ratio on the other speeds are: second speed,  $6\frac{1}{4}$  to 1; first speed,  $9\frac{1}{4}$  to 1.

5—No; the only type of starter about which there is any question is the ignition type and the consensus of opinion seems to be and the tests up to date seem to show little danger to the motor to be apprehended from starters of this type when operated on gasoline or acetylene.

### A TROUBLESOME LEAK

Creston, Ia.—Editor Motor Age—Can ordinary coal oil be used in a motor with good results when mixed with one-half gasoline? I often have heard it was better than gasoline alone. A party near here, it is claimed, used crude oil, adding only 1 pint of gasoline, and claims to get more power than with gasoline alone. This is in a stationary engine.

2—In driving my car, after getting it warmed up good some times, it will cause a hissing sound, as if a priming cup was open, and loses power until the car will almost stop on level ground. By throwing out the clutch and speeding up the motor I can get along again, sometimes for 10 or 12 miles, and then the hissing will return. Again I can drive 30 miles with no trouble, and the next time I take the car out the trouble will return. I have had four different men try to fix it, have had the valves ground and valve tappets set so a thin card will just slide under. Another machinist looked to the priming cups and said they worked open by road jar, but as yet the trouble has not been overcome. However, it is much better since adjusting the space between the valve tappets and the pushrods. It seems to run very well the first few miles, but seems to get worse when run 20 to 30 miles and has become warmed up. Also since this trouble came up it seems as though I can get but 12 to 14 miles per gallon of gasoline, when before I could get 20 to 25 miles.—A Subscriber.

1—The use of kerosene, whether alone or mixed with gasoline, presents two difficulties. The first one is in getting a proper mixture of the kerosene and air from the carbureter. A special carbureter can be obtained which will handle the kerosene, but for use in a motor car the economy of its use hardly warrants the

### NOTICE TO CORRESPONDENTS

Motor Age has received communications addressed to the Readers' Clearing House from the following named towns and nom de plumes:

Chicago, Ill.—A Subscriber.  
Tulsa, Okla.—A Reader.  
Dexter, Ia.—G. W. M.  
Hugo, Okla.—J. H. M.  
Los Angeles, Calif.—A Subscriber.  
Dayton, O.—Subscriber.  
Cincinnati, O.—R. A. G.  
Two Rivers, Wis.—W. E. S.  
Columbia, Mo.—A Subscriber.  
Brookings, S. Dak.—Turntacks.  
Cox's Creek, Ky.—O. J. C.  
Freeport, Ill.—C. W.

These communications will be held until the proper signatures have been received. All communications written over a nom de plume must bear the writer's signature, otherwise such communications will not be answered. These signatures are wanted as proof of the authenticity of the inquiries.—Editor Motor Age.



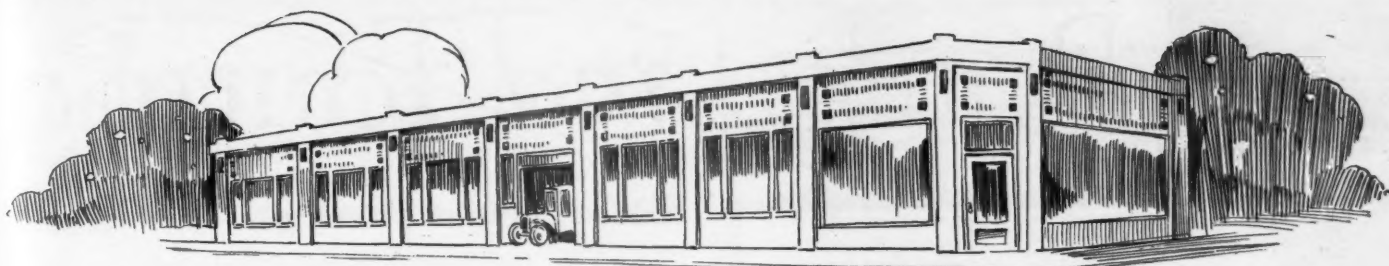


FIG. 6—APPEARANCE OF ONE-STORY GARAGE BUILDING 125 BY 25 FEET IN SIZE

change, at least until the price of gasoline gets higher than it is at present. The second disadvantage of kerosene is that without high compression it is impossible to burn up all of it so that you will be troubled with carbon deposits and fouling.

2—It is evident that you have a leak which causes a serious loss of compression and which does not become serious until the leak is increased by heating. Whether this is in the valves or past the piston it is impossible to say. The chances are that the leak is past the piston and that new piston rings should be fitted. If you have reason to believe that the priming cups are at fault, it would be well to test this out by removing the priming cups and screwing in plugs in place of them.

#### WOULD INCREASE CAR SPEED

South Haven, Mich.—Editor Motor Age—I own a 1909 model 10 Buick. I desire to increase its speed a little by changing the gear. The car makes about 47 miles an hour now but I desire to make it about 55 miles. The pinion on the shaft has thirteen teeth and the sprocket in the differential has forty-eight. Would it be advisable to do this?—F. A. Wheeler.

It is claimed that by properly tuning up your car and motor, you should be able to get the desired speed without changing the gear ratio of the rear-axle. It hardly would be practical to change to a smaller gear ratio, unless you wish to use the car for racing only; for by changing the gear ratio, you would put an excessive strain on the motor at low speeds, and you find the car quite lacking in power when required to negotiate rough roads, mud, sand or hills. However, if you still desire to make the change, it would be advisable to consult the factory;

it might be possible to get gears to replace the ones now in use; but an entirely different axle generally is required.

#### NO KICK ON PARTS PRICES

White Creek, Wis.—Editor Motor Age—Would Motor Age advise the use of powdered graphite in the crankcase of a splash system engine? Oil is pumped into the main bearings and troughs into which the cranks dip. Will either have any bad effect on a motor?

I notice quite a little comment on the price of repairs. Now, I have no kick coming against the manufacturers of my car on the price of repairs—front spring, \$1.80; rear spring, \$3.50; jackshaft, \$1.50; rear fender painted, \$4.50; front sprocket, \$1.50; rear sprocket, \$5.25. But as I got the first car of the model out, it is somewhat of an experiment, and the company will not make any replacements, according to its guarantee.—M. C. Greenwood.

There is no objection to using a mixture of graphite and oil in the splash lubrication system if the correct amount is used. Not over 4 per cent by weight of graphite should be mixed with the oil. It will have no effect on the combustion of the mixture.

#### PLAN FOR 125-FOOT GARAGE

Potters, Iowa—Editor Motor Age—We want to put up a garage 125 by 25 feet, one-story building, with two departments. We don't want a front door, only a side door into the repair shop. The office to be back next to the partition, like the accompanying sketch, or something of that sort. Please publish a diagram in the Reader's Clearing House.—A. John.

A floor plan of a garage of the size you mention and with the two departments arranged as desired is illustrated in Fig. 5. Fig. 6 is a suggestion as to the exterior.

## The Effect of Stroke

### Question of Best Cylinder Size for Use in Touring—Disco Starter on Carbo-Light Gas

LITCHFIELD, Ill.—Editor Motor Age—Kindly advise whether a motor  $4\frac{1}{2}$  inch bore by 4-inch stroke is preferable to one  $3\frac{3}{4}$  inch bore by  $4\frac{1}{2}$  inch stroke, the cars having practically the same weight and wheel base, and to be used for country roads. Will a motor of the latter dimensions develop as much power and speed, and has the former as good hill-climbing qualities in proportion to the latter.—H. F. H.

Assuming the same type of motor in both cases, it is probable that the motor with the smaller bore and longer stroke will have the greater life and greater fuel efficiency. It will not accelerate as rapidly as the larger bore motor with the shorter stroke. The hill climbing qualities will be nearly the same. According to the accepted formula, the S. A. E. formula, the motor with the larger bore is rated at a greater horsepower, for the stroke is not taken into consideration in this formula. According to one formula, which takes stroke and speed into consideration, the four-cylinder motor with  $4\frac{1}{2}$ -inch bore by 4-inch stroke, should develop 20.74 horsepower at 1,600 revolutions per minute; and the motor with  $3\frac{3}{4}$ -inch bore by  $4\frac{1}{2}$ -inch stroke should develop 23.86 horsepower at the same speed. This is based on the assumption that 1 horsepower is developed at 1,600 revolutions per minute for each 10 cubic inches of piston displacement, an assumption which has been found to give quite uniform results. According to the S. A. E. formula a four-cylinder motor of  $4\frac{1}{2}$ -inch bore would develop 27.25 horsepower and the motor with  $3\frac{3}{4}$ -inch bore 22.50 horsepower.

#### DISCO STARTER ON CARBO-LIGHT

Santa Barbara, Cal.—Editor Motor Age—Will the gas from a carbo-light tank generator operate a Disco self-starter? The gas is delivered at 15 pounds pressure. The generator was described in Motor Age in August.

2—If this pressure is not sufficient, how could it be raised?—P. V. B.

Yes; the Disco is claimed to operate at as low as 2 pounds pressure and since the gas generated in the tank you mention is acetylene it should work.

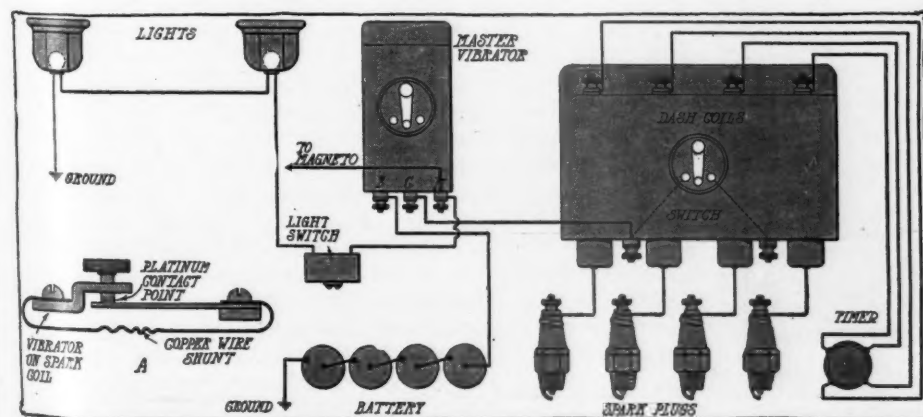


FIG. 7—CONNECTIONS FOR HEADLIGHTS AND MASTER VIBRATOR ON FORD MAGNETO



# Routes and Touring

## Motor Trips Through Ten States

ORANGE, Texas—Editor Motor Age—Through ten states from Texas to New York is the extent of the first motor car trip made by Mrs. L. H. Litcher and party from Orange, Tex., in a car driven by the writer. We passed through Beaumont and Houston, and had a very fine run through woods and prairies. On the way to Austin the first 40 miles was shell road and the balance sand. All along the railroad the settlers predicted that we would have trouble from Page to McDode on account of this sand, into which we plunged up to our hubs. I put on the chains and had little trouble in negotiating the 12 miles on first and second speed. We traveled over the alkali roads out of Austin very successfully into Georgetown.

Our plans were to go to Fort Worth but we changed them and passed through Burnet, and Lometa. The right route was hard to find but by asking we reached Brownwood where the people remarked that we would not get through to Santa Anna, Ballinger and San Angelo. This is a cattleman's town and is the real Texas. Each ranch is entirely fenced in, but there are gates for the traveler, and here we began to travel on the lonely prairies. There are no roads; only cow pastures and lanes.

After leaving San Angelo we started to Big Springs over rolling country and had a few streams to wade. We arrived at Lamesa, then Plainview where we got bogged up to the frame. We worked for 2 hours in the rain and finally got out and reached Amarillo, hitting stumps, rocks and prairie dog holes. We took the wrong road out of Amarillo and reached the Canadian brakes on the Canadian river. In trying to cross a stream we sank up to the frame and had to build a bridge under the car out of stones in order to bring the car level with the ground.

We next reached the Canadian river and could not cross on account of the quicksand. Returning to Amarillo we laid over for a day, then started out for Dalhart which run was more enjoyable in spite of the heavy red sand. There had been some heavy storms west of Dalhart and the bridges were washed away. This was discouraging and at the Texas line we cut north for Buffalo Springs, going through a little of Oklahoma, then into Clayton, N. M. Here we saw car after car in small garages, broken down from the lava rocks on New Mexico roads. For 100 miles we had to ride over this lava rock road. In some places the rocks were so large we had to stop and remove them.

At Deadmans we had to cross a railroad. The rails proved to be too high for our car and the flywheel hung on the rail and broke the oil cock. We happened to have a small can in which



- 1—Sample of lava rock road scene prevailing between Des Moines, N. M., and Raton, N. M.
- 2—Texas prairie land for 300 miles becomes rather monotonous
- 3—Encountering the red sand road between Amarillo and Dalhart, Tex.

## Tampa Motorist Plans to Run Away

TAMPA, Fla.—Editor Motor Age—Kindly advise where I may obtain the route of a trip from Tampa to New York City.—A. H. Shepardson.

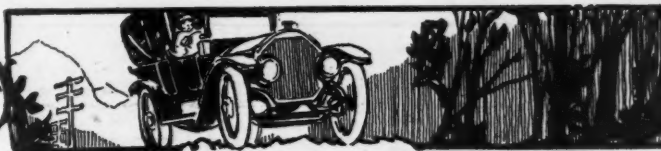
Motor Age can give you a list of the towns through which such a trip would extend, but if you desire running directions you had better secure a Blue Book, volume 3.

Tampa to Daytona and Jacksonville takes you through Mango, Seffner, Dover, Plant City, Lakeland, Bartow, Eagle Lake, Winter Haven, Haines City, Loughman, Campbell, Kissimmee, Pine Castle, Orlando, Maitland, Longwood, Sanford, Osteen, Enterprise, Orange City, Deland, Daytona, Sea Breeze, Ormond, Moultrie, St. Augustine, Jacksonville. On the stretch from Jacksonville to Savannah you will have to secure a ferry at Kings Ferry, Owens Ferry and Darien-Dents. The road out of Savannah leads to Callahan, Kings Ferry, Owens Ferry, Tarboro, Old Sterling, Brunswick, Darien, Eulonia, Riceboro.

Savannah to Macon and Atlanta routes through Stilson, States-



# Information



## Test of Car Stamina and Driving

we heated coffee along the road, and I was able to catch about a quart of oil. This luckily saved me a walk of 40 miles. I managed to plug up this hole in the oil cock, but the car had to be jacked up and backed off the track.

We next built an incline to get over the track. A bridge was our next stop. It looked mighty shaky to me, so we made it a little stronger and I took the car over empty. A short drive of 20 miles brought us to a place where a bridge had been washed away, and we used part of a farmer's fence to make a crossing. This took us an hour and finally we landed on a graded road which was meant for a railroad. There was just enough room for one vehicle and it meant a steady wheel or the bottom of a 40-foot embankment.

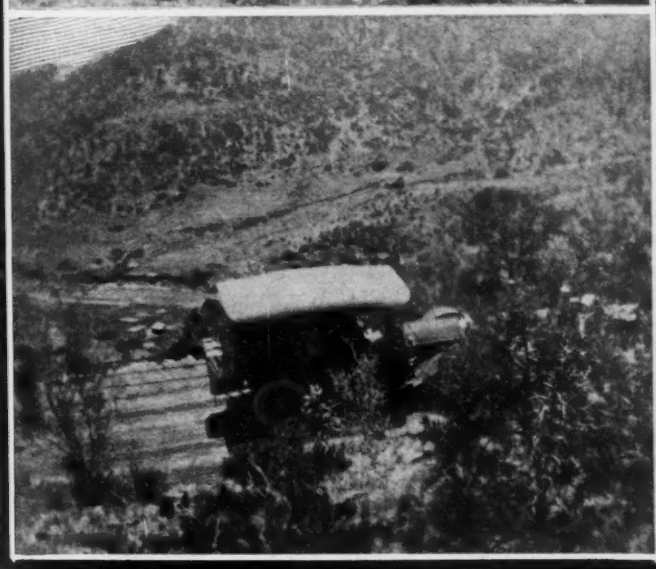
We arrived at Raton, N. M., at last after 18 hours of riding and stayed there until the next day when we crossed the border line of Colorado. Here we had to hug the edge of the mountain and finally reached Trinidad, passing nothing but a camp wagon. At Trinidad we were advised to stay over on account of heavy storms, but the next day we rolled off for Walsenburg and Pueblo in the heavy rain. For 40 miles I had to run in first and second speed and it took me 6 hours. The road between Pueblo and Colorado Springs was fine, and after our 10 days of hard riding from Orange, Tex., we rested here for a week before continuing to Denver. The rest of the party left me and I continued the remainder of the trip with a friend. I passed over 70 miles of Colorado desert and the sand was like a furnace. I routed through Fort Morgan, Sterling, Lamar, Wauweta, McCook, Atlanta, Holdrege, Oxford, Lincoln, and Omaha. We stayed in Omaha a day and crossed the Missouri river into Council Bluffs, Ia. Through Iowa the scenery is beautiful along the river-to-river road through Des Moines, Brooklyn, Iowa City, Davenport, thence to Clinton and across the Mississippi river into Illinois to Dekalb. It rained from here to Chicago, where our muddy car attracted considerable attention.

We left Chicago after buying an outer casing for the car and headed for South Bend and Toledo over fine roads. We rode all night trying to make Cleveland but our gasoline gave out and we pulled into a farm yard and slept in the barn until morning. We made Erie in 1 day, then Buffalo, where we stayed for 5 days. We made Albany in 18 hours, then New York in 25, and the roads seemed like a boulevard in comparison with those on the first part of our journey. The trip was made in 22 running days.—Herbert Fielder.

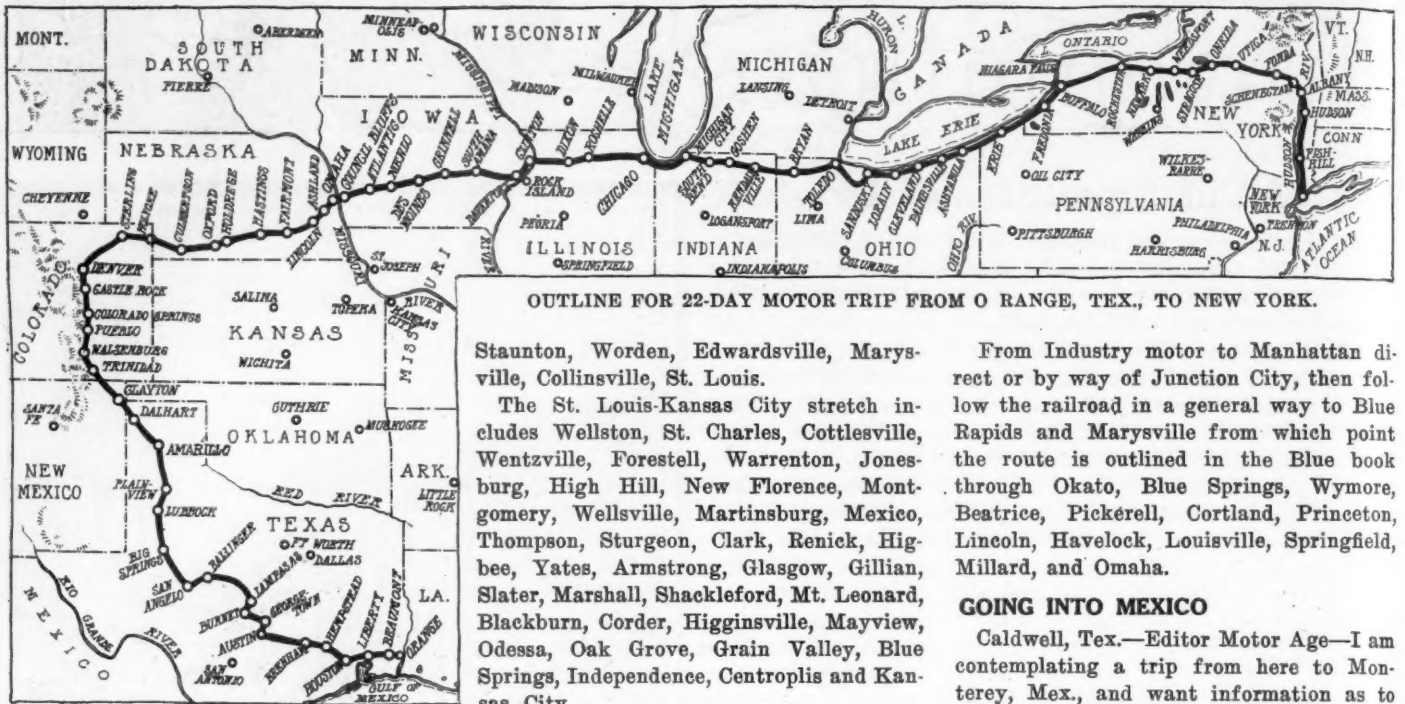
## From Summer Heat of Florida

boro, Rockyford, Scarboro, Millen, Perkin, Waynesboro, Louisville, Davisboro, Sandersville, Milledgeville, Macon, Loraine, Bolingbroke, Smarrs, Forsyth, Barnesville, Milner, Griffin, Pomona, Hampton, Lovejoy, Jonesboro, Atlanta. The Atlanta-Roanoke routing is through Decatur, Ingleside, Scottdale, Stone Mountain, Snellville, Lawrenceville, Auburn, Winder, Commerce, Franklin, Royston, Canon, Lavinia, Anderson, Piedmont, Oak Grove, Greenville, Greer, Duncan, Spartanburg, Converse, Gafney, Blacksburg, Grover, N. C., Kings Mountain, Bessemer City, Gastonia, Lowell, Belmont, Charlotte, Newell, Concord, Kanapolis, China Grove, Salisbury, Spencer, Lexington, Thomasville, High Point, Jamestown, Greensboro, Battle Grounds, Guilford, Summerfield, Winston-Salem, Centerville, Kernersville, Stokesboro, Ellisboro, Madison, Stoneville, Ridgeway, Martinsville, Oak Level, Snyderoville, Rocky Mount, Roanoke.

Continue to New York through Cloverdale, Troutville, Buchanan, Natural Bridge, Fancy Hill, Lexington, Fairfield, Midway,



- 1—Typical road of New Mexico, with its tell-tale lava rock.
- 2—A little fording was necessary after leaving San Angelo, Tex.
- 3—Climbing a Colorado mountain, a delightful change from the flat Texas country.



OUTLINE FOR 22-DAY MOTOR TRIP FROM ORANGE, TEX., TO NEW YORK.

Breenville, Minto Springs, Staunton, Verona, Burkstown, Mount Crawford, Harrisonburg, Lacey Springs, New Market, Mount Jackson, Edinburg, Woodstock, Mauertown, Strassburg, Middletown, Stephen City, Winchester, Berryville, Leesburg, Falls Church, Washington, D. C., Stanton, Blagdensburg, Laurel, Relay, Catonsville, Baltimore, Towson, Bel Air, Churchville, Harve De Grace, Perryville, Elkton, Newark, Wilmington, Chelsea, Village Green, Darby, Philadelphia, Ogontz, Bustleton, La Trappe, Langhorne, Trenton, Princeton, Kingston, New Brunswick, Metuchen, Elizabeth, Newark, Weehawken, New York city.

#### FROM OHIO TO TEXAS

El Paso, Tex.—Editor Motor Age—I should like the best routes from Cleveland, O., to El Paso, Tex., by way of Chicago, St. Louis, Kansas City, etc. We would appreciate any information relative to the best route, best season of the year to make the trip, and what laws or regulations one would have to comply with, etc.—C. R. Johnson.

The first leg to Chicago routes through Ridgeville, Elyria, Oberlin, Kipton, Wakeman, Townsend, Norwalk, Monroeville, Bellevue, Clyde, Fremont, Woodville, Toledo, Caragher, Swanton, Delta, Wauseon, Archbold, Bryan, Butler, Kendallville, Brimfield, Ligonier, Benton, Goshen, Dunlap, Osceola, Mishawaka, South Bend, New Carlisle, Laporte, Pinhook, Westville, Valparaiso, Wheeler, Hobart, Highlands, Hammond, South Chicago, Jackson Park and Chicago.

For Bloomington motor through La Grange, Joliet, Minooka, Morris, Dwight, Odell, Pontiac, Chenoa, Lexington, Towanda, Bloomington, Continuing to St. Louis pass through Shirley, McLean, Atlanta, Lincoln, Elkhart, Spaulding, River-ton, Springfield, Litchfield, Mt. Olive,

Staunton, Worden, Edwardsville, Marysville, Collinsville, St. Louis.

The St. Louis-Kansas City stretch includes Wellston, St. Charles, Cottleville, Wentzville, Forestell, Warrenton, Jonesburg, High Hill, New Florence, Montgomery, Wellsville, Martinsburg, Mexico, Thompson, Sturgeon, Clark, Renick, Higbee, Yates, Armstrong, Glasgow, Gillian, Slater, Marshall, Shackelford, Mt. Leonard, Blackburn, Corder, Higginsville, Mayview, Odessa, Oak Grove, Grain Valley, Blue Springs, Independence, Centropolis and Kansas City.

Follow the Sante Fe trail to Martin City, Olathe, Gardner, Edgerton, Wellsville, Ottawa, Homewood, Ransomville, Williamsburg, Silkville, Agricola, Waverly, Emporia, Saffordville, Cottonwood Falls, Elmdale, Clements, Florence, Peabody, Walton and Newton thence south to Wichita, Peck, Riverdale, Wellington, Caldwell, Renfrow, Medford, Pondereek, Kremlin, Enid, Waukomis, Bison, Hennessey, Dover, Kingfisher, El Reno, Minco, Poceset, Chickasha, Verden, Anadarko, Apache, Lawton, Emerson, Randlett, Burkburnett, Wichita Falls, Jacksboro, Weatherford, Annetta, Aledo, Ben Brook and Ft. Worth.

Ft. Worth to El Paso is through Ben Brook, Aledo, Annetta, Weatherford, Mineral Wells, Palo Pinto, Breckridge, Albany, Hamby, Abilene, Tye, Merkel, Trent, Sweetwater, Roscoe, Loraine, Colorado, Westbrook, Iatan, Coahoma, Big Spring, Stanton, Midland, Warfield, Odessa, Grand Falls, Ft. Stockton, Marathon, Alpine, Marfa, Aragon, Valentine, Wendell, Chispa, Lobo, Dalberg, Torbert, Grayton, Sierra Blanca, Etholen, Lasca, Finley, Ft. Hancock, Fabens, and El Paso.

Living in El Paso, you know perfectly well what the heat is like during the dead of summer, and if you can stand it through Texas the summer will be all right for your trip. A great many people advocate early fall for touring, and it would do very well for you, too.

You will not be obliged to secure a license in any of the states through which you will tour. The only limitations as to the number of days spent in the states will be in Illinois which is 60 days and Missouri 20 days.

#### INDUSTRY TO OMAHA

Wakefield, Kas.—Editor Motor Age—What is the best route from Industry, Kan., to Omaha, Neb., via Blue Springs and Beatrice?—S. W. Schenberger.

From Industry motor to Manhattan direct or by way of Junction City, then follow the railroad in a general way to Blue Rapids and Marysville from which point the route is outlined in the Blue book through Okato, Blue Springs, Wymore, Beatrice, Pickerell, Cortland, Princeton, Lincoln, Havelock, Louisville, Springfield, Millard, and Omaha.

#### GOING INTO MEXICO

Caldwell, Tex.—Editor Motor Age—I am contemplating a trip from here to Monterey, Mex., and want information as to the road from San Antonio, Tex., via Laredo. I am pretty well acquainted with the road from here to San Antonio. If possible, please give directions so that I can adopt the best road and avoid sand if any.—Burus J. Gilley.

The San Antonio-Laredo route has never been completely logged. Motor Age is informed by Dr. E. H. Sauvignat of Laredo that there is a good road following the I. and G. N. tracks, but between San Antonio and Pearsall it is so sandy that most prefer to go from San Antonio to Hondo, then to Pearsall and follow the tracks to Laredo. This route is fairly good and an average of 25 miles per hour can be made on it. The itinerary is Castroville, 25.4 miles; Hondo, 16.9 miles; Pearsall, 35.1 miles; Frio river, 11.2 miles; Dilley, 5 miles; Cotulla, 16.9 miles; Encinal, 29.3 miles; Cactus 9.7 miles; Laredo, 30 miles.

The route from Laredo to Monterey, Mex., is not one of the best. Outside of the Flanders car in the under-three-flags trip, no one seems to have gone more than half way.

If you want to return to San Antonio by a longer route such a one would take you to Corpus Christi from Laredo, the details of which can be secured from the Crescent garage at Laredo.

It is about 170 miles from Laredo to Corpus Christi. Start out following the railroad through Reiser, Aguilares, and Torrecillas, then travel over the old stage road to Los Angeles ranch and Albert Ayros ranch returning to the road which follows the railroad at Realitos. There are high centers and a few stumps on the stage road, but it avoids the sand between Torrecillas and Realitos. From Realitos to Corpus Christi follow the railroad in a general way and you will find the going quite good.

With San Antonio your objective point, motor through McKenzie, Angelita, Odem,



Sinton, St. Paul, Papalote, Skidmore, Beeville, Normana, Pettus, Kennedy, Kansas City, Falls City, Poth, Floresville, South Alamo, San Antonio. From Corpus Christi to San Antonio it is a distance of 160 miles.

Should you take this longer route, you need not go as far as Corpus Christi unless you want to. At Alice you can motor direct to Skidmore, thence to Beeville and on up to San Antonio as outlined above.

#### DALLAS TO DETROIT

Seguin, Tex.—Editor Motor Age—I shall make a motor trip from Dallas, Tex., to Detroit, Mich., and would like all the necessary data in regard to road conditions, etc. I have not yet decided whether to go by way of Oklahoma City, Kansas City and Chicago, or by way of St. Louis. I want the best roads. What books give this information, also what do they cost? Is there any book that gives the motor car laws of the states?—C. F. Blumberg.

A route Motor Age would suggest takes you to Omaha, Neb., then through Iowa to Chicago. Crossing the Red river at Dennison through Oklahoma the routing would be Durant, Sulphur, Palls Valley, Purcell, Norman, Oklahoma City, Guthrie, Perry, Newkirk, Arkansas City, Winfield, Wichita, Newton, McPherson, Salina, Minneapolis, Concordia, Belleville, Chester, Hebron, Geneva, Fairmont, Friend, Lincoln, Havelock, Waverly, Louisville, Springfield, Milard, Omaha and Council Bluffs, take you into Iowa.

Follow over the River-to-River road directly from Council Bluffs to Weston, Underwood, Neola, Minden, Avoca, Walnut, Marne to Atlantic, then make a short cut on the White Pole road through Anita, Adair, Menlo, Stuart, Dexter, and Ortonville, where you return to the River-to-River road and continue on it through Wauke, Des Moines, Mitchellville, Colfax, Newton, Kellogg, Grinnell, Brooklyn, Victor, Ladora, Marengo, South Amana, Homestead, Tiffin, Coralville, Iowa City, West Liberty, Atalissa, Moscow, Walton, Durant, Walcott and Davenport.

Through Illinois, from Davenport to Chicago the towns are Moline, Brier Bluff, Geneseo, Sheffield, Wyanet, Princeton, Holwayville, Seatonville, Peru, La Salle, Ottawa, Danway, Newark, Milbrook, Yorkville, Montgomery, Aurora, Naperville, Downers Grove, Hinsdale, Fullersburg, Forest Park and Chicago.

The main traveled road from Chicago to South Bend routes through Jackson park, Bryn Mawr, South Chicago, Hammond, Highlands, Hobart, Valparaiso, Westville, LaPorte and New Carlisle. For Detroit, the towns are Niles, Summerville, Pokagon, Dowagiac, Decatur, Paw Paw, Kalamazoo, Galesburg, Battle Creek, Cresco, Marshall, Albion, Parma, Jackson, Chelsea, Ann Arbor, Ypsilanti, Denton, Canton, Wayne, Dearborn and Detroit.

The 1912 Blue Book, price \$2.50, gives running directions on most of your trip; also motoring laws in the middle west. There is no provision made for non-resi-

dents in Kansas; Nebraska non-residents are allowed 30 days; you are exempt in Iowa, Michigan and Indiana. Illinois allows 60 days.

Your roads in parts of Oklahoma might not be so very good and in Indiana you strike some sand, but as you live in Texas you will feel quite at home.

#### ST. LOUIS TO DETROIT

Dallas, Texas—Editor Motor Age—Will Motor Age please answer the following questions?

1—How far is it from St. Louis to Indianapolis; what kind of roads are there, and through what towns?

2—What is the best route from Indianapolis to Chicago; also the distance and kind of roads?

3—Which is the best way to reach Detroit, through Bryan or Toledo? What is the distance, the kind of roads, and price of gasoline along these roads?—Paul Baker.

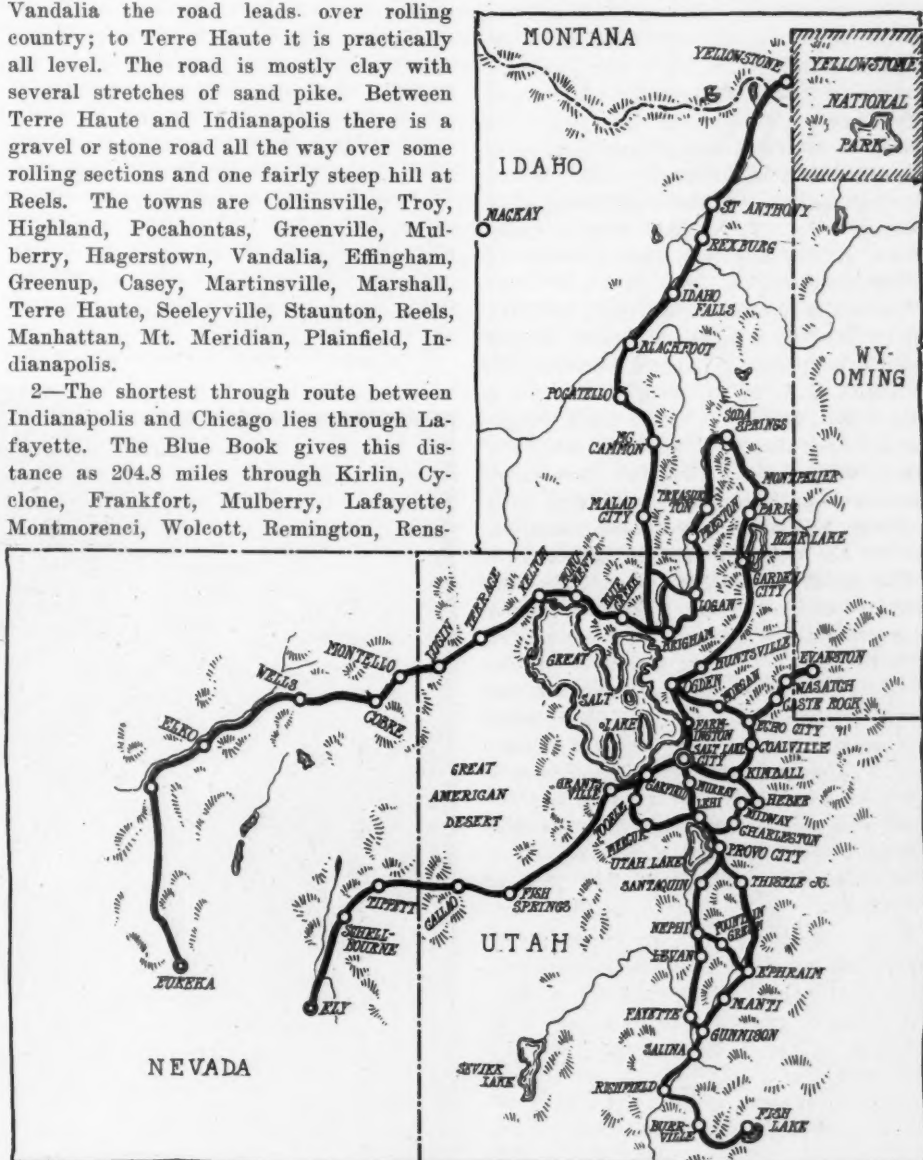
1—The distance from St. Louis to Indianapolis is 243.6 miles, and as far as Vandalia the road leads over rolling country; to Terre Haute it is practically all level. The road is mostly clay with several stretches of sand pike. Between Terre Haute and Indianapolis there is a gravel or stone road all the way over some rolling sections and one fairly steep hill at Reels. The towns are Collinsville, Troy, Highland, Pocahtontas, Greenville, Mulberry, Hagerstown, Vandalia, Effingham, Greenup, Casey, Martinsville, Marshall, Terre Haute, Seeleyville, Staunton, Reels, Manhattan, Mt. Meridian, Plainfield, Indianapolis.

2—The shortest through route between Indianapolis and Chicago lies through Lafayette. The Blue Book gives this distance as 204.8 miles through Kirlin, Cyclone, Frankfort, Mulberry, Lafayette, Montmorenci, Wolcott, Remington, Rens-

selaer, Thayer, Crown Point, Dyer, Hammond, South Chicago, Jackson Park, Chicago. This is over good gravel, and macadam or stone road with a few stretches of dirt and sand near Thayer.

3—The regular Chicago-Detroit road does not go through either Bryan or Toledo. By way of Toledo is a distance of 344 miles as against only 311 by way of Kalamazoo. After reaching South Bend there is no sandy road to travel over as there is on the shorter, although it is not bad. The Chicago-South Bend stretch is Jackson Park, South Chicago, Hammond, Highlands, Hobart, Valparaiso, Westville, Pinhook, La Porte, New Carlisle, South Bend. Continuing to Bryan, Toledo and Detroit you pass through Mishawaka, Goshen, Ligonier, Kendallville, Bryan, Archbold, Wauseon, Delta, Swanton, Caraghar, Toledo, Dundee, Milan, Stonycreek, Ypsilanti, Canton, Dearborn, Detroit.

There is no reason why you will not find the usual price of gasoline asked, that is 15 or 20 cents a gallon.



The above map shows the territory which is covered in the Salt Lake Tribune route book of 100 pages containing logs of over 5,000 miles of the main traveled roads in Utah, Idaho, Wyoming, Montana and Nevada. No difficulty in following the directions will be experienced by even those who are not familiar with the use of a route book. It is put forth in a very simple manner, with a paragraph on the road conditions and advice as to the most feasible road topping each section.

# The Realm of the

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## Uncle Sam's Needs in the Way of a Truck

AMERICAN military men are determined to have the motor truck; but the problem confronting those who have taken up the question of finding a field motor truck is unique. There is no doubt of the desirability of a self-propelled field wagon, and the economy of the truck is easily demonstrated. The difficulty is to find a motor truck which will not only haul the heavy loads required up steep hills, over all sorts of roads, but also be not so heavy as to break down the light bridges found in the more thinly settled regions of the United States. The army quartermaster always must be prepared to transport supplies through any region accessible to field artillery, which is the heaviest portion of the equipment of a moving army. The supply wagon, mule-drawn or self-propelled, must be able to follow the field gun.

The ordinary commercial truck, built for use on hard roads or paved streets, weighs about 6,000 pounds. Captain Alexander E. Williams, U. S. A., of the quartermaster's department, believes a motor truck weighing not more than 3,000 pounds is what the army really needs. Thus far, the manufacturers who have been cooperating with Captain Williams, have been able to achieve the weight reduction desired.

The motor trucks have been built and delivered in Washington, which are claimed to represent the present limit in weight reduction. One of these was made by the White Co., of Cleveland, O., and another by Alden Sampson Co. The White truck is shaft-driven, has 30-horsepower engine, and weighs 4,770 pounds. The Sampson truck has chain-drive, a 24-horsepower engine, and weighs more than 5,000 pounds. Captain Williams is of the opinion that both makers can get down to 4,000 pounds, eventually.

It is calculated that an army motor truck, to be an economical investment, must haul a load of about 3,000 pounds. The heaviest gun transported by the field artillery weighs 7,000 pounds. Thus the total weight of a 4,000-pound truck, loaded, would be just equal to that of the heaviest artillery. The lightest truck thus far offered would, when loaded, weigh 770 pounds more than the field gun which, to be successful, it must follow.

The Four-Wheel Drive Co., of Clintonville, Wis., has suggested to Captain

**Army Officers Insist on Light Weight and Contend Supply Wagons Should Follow Field Gun Wherever It Goes—  
Strenuous Tests Expected in Summer Maneuvers—Trials Are Now Being Made**

Williams that its type of motor truck would approach more nearly than any other the requirements of the army. The government now owns one. In the Four-Wheel truck, the engine is made to push the weight along, as well as to pull it, apparently offering greater opportunities for putting the weight far forward.

Strenuous tests will come this summer when the troops begin to take the field for annual maneuvers. The trucks will be put in the baggage trains, and will compete with the mule-drawn wagons in hard campaigning. Efficiency and economy will be the basis of comparison between the two means of transportation.

It is expected that these tests will re-

veal some defects, and suggest possible improvements. But, it is safe to say that if any of the cars prove reasonably satisfactory, a beginning will be made toward eliminating the mule and wagon, and the substitution of the self-propelled truck. Conservative estimates name 1,500 as the number of motor trucks which will eventually be required by the mobile army in time of peace.

### PLAN TO BUILD A TRUCK

The Sheldon is very likely to be the name of the 1-ton truck that Wade & Dunton, of Lewiston, Me., contemplate building in the near future. Plans for its manufacture have been completed and work will begin to market them for 1913.



THE ARMY TRUCK CARRYING ITS USUAL LOAD



# Commercial Car

## Government Noting Who Buys Trucks

**American Manufacturers Asked to Notify Government of Sales Made in Order That War Department Can Prepare for Possible Trouble—Captain Williams' Views on Mechanical Transportation**

NOTWITHSTANDING the fact that the United States government only has twenty motor trucks in the service of its war department, yet that does not signify that Uncle Sam is not anticipating the possible need of a motor-equipped army in case of war. The government is conducting investigations with this end in view and doubtless, if the occasion demanded, it would be found that the officials at Washington would not be caught by surprise if war were declared.

At least this is the deduction that is made following the reading of an article by Captain Alexander E. Williams of the Nineteenth Infantry, U. S. A. in the Infantry Journal, which is devoted solely to

a military clientele. Captain Williams states that the war department has taken steps to get together information as to the number and kinds of trucks being manufactured and sold commercially in the United States, with the names of the manufacturers.

What is not known generally is that the government has made arrangements with each manufacturer of gasoline trucks to report the sale of each machine to the war department, giving date of sale, name and address of party to whom sold and the capacity of the truck sold. By keeping this data properly tabulated, the department, when the emergency comes, will have definite information at hand as to the num-

ber and kind of trucks in use in the United States and will be in position to purchase those best suited to meet the emergency. Furthermore, by keeping track of the trucks sold by each manufacturer, information will be available as to the output of each factory, which would be valuable in case it was necessary to purchase trucks on short notice.

Captain Williams thinks that if the army adopts a special kind of truck for use in time of peace, that some provision should be made whereby the government would be able to similarly equip a very large army called into service for war. He thinks there are two ways this could be accomplished—first, accumulate and store in the various supply depots sufficient trucks to meet the requirements of war; second, subsidize trucks, built in accordance with army specifications, so that merchants, farmers, truckers, contractors and others may be induced to use trucks of this type. If either one of these plans is not adopted, it will result in the necessity of purchasing at short notice whatever means of transportation there may be available at the time of war, regardless of whether or not it is suitable to the purpose.

Economy of the road space and economy of operating expense are two of the advantages of the motor truck over the army mule in the opinion of Captain Williams who is the man who is doing most of the experimenting with motor trucks for the government. Captain Williams has made a thorough study of the proposition and was placed at the head of the expedition that was sent out from Washington, in February, by the government on a 1300-mile hike across the country to Fort Benjamin Harrison at Indianapolis, the outfit including four trucks. Captain Williams finds that the upkeep of the truck is less than half that of the mule-driven vehicle, and to prove his point he offers statistics.

"For the purpose of comparison we will consider the transportation for one complete division of the army," says Captain Williams. "This requires 807 motor trucks in place of 759 wagons and 48 ambulances. The road space occupied by this number of trucks will be 7,352 yards less than for an equal number of wagons."

Taking up the subject of upkeep, Captain Williams finds that to offset the 807 trucks, a division would need 3,268 mules. The



REAR VIEW OF ARMY TRUCK LOADED

expense of feeding the mules for 1 month would be \$24,941.37, counting on the animals consuming 882,360 pounds of oats and 1,172,560 pounds of hay, whereas the 807 trucks in 1 month would consume 96,840 gallons of gasoline, which would cost \$12,105. Going farther and taking up the space saved in carrying these supplies, the captain figures that the hay and oats would occupy 146,563 cubic feet and the gasoline only 19,368 cubic feet. The prices are the average of those paid by the government during the fiscal year, 1910.

"This covers the cost of forage and gasoline delivered by contractors at specified points," says Captain Williams. "in making shipments from those points to the rail head, thence to the advance depots, the bulk of the gasoline would be less than one-seventh that of forage. This would mean, besides the saving in the cost of transportation, a saving in the space required for the storage at the depots, which would be exceedingly valuable in time of active operations when the transportation lines usually are congested with the large quantities of supplies being forwarded to the army in the field. In time of peace, when contracts are made for this class of supplies to be delivered locally, there will be a saving in the storage space required at posts."

"The tank on each truck will have capacity for 20 gallons of gasoline which will be sufficient to operate the engine for approximately 6 days, the truck making from 25 to 30 miles per day. With the use of wagons, existing regulations require that 3 days' grain be taken for animals. This grain necessarily is placed in the wagon, taking up a part of the available loading space.

"Trucks will have another very decided advantage from a military point of view in that they will require only about one-third of the road space required by the same number of wagons drawn by mules. Besides reducing the road space required, the use of trucks will make it possible for the army to operate farther from its base than would be done with animal-drawn transportation, it being practicable to operate the truck continuously during 24 hours and at greater speed than attainable with mules.

"We might go on indefinitely making comparisons which would show the truck to be economical, but I believe that any one who considers the matter carefully will admit the superiority of the truck."

#### MOTOR SERVICE PROPOSED

Representatives of the New England Auto Service Co. appeared at the monthly meeting of the Mansfield, Mass., Board of Trade last week and proposed to establish an hourly motor service between that town and Easton, provided that the company may be given the contract to transport the school children, Easton having agreed to this proposition. The idea met with favor and a committee has been appointed to go into the matter more thoroughly and report in a short time.



WHITE ARMY TRUCK BEING TRIED OUT BY GOVERNMENT

## Motor Truck Service for Porto Rico

### Plans Made to Install Fleet to Compete With Mules for Privilege of Hauling Freight from Interior to Coast

#### —Rates Vary from 15 to 40 Cents a Mile

INSTALLATION of a fleet of thirty Saurer trucks calls attention to the efforts of Porto Rico to motorize its freighting service, it being the intention to put the power vehicles into direct competition with the bull carts which now operate between the coast and the interior.

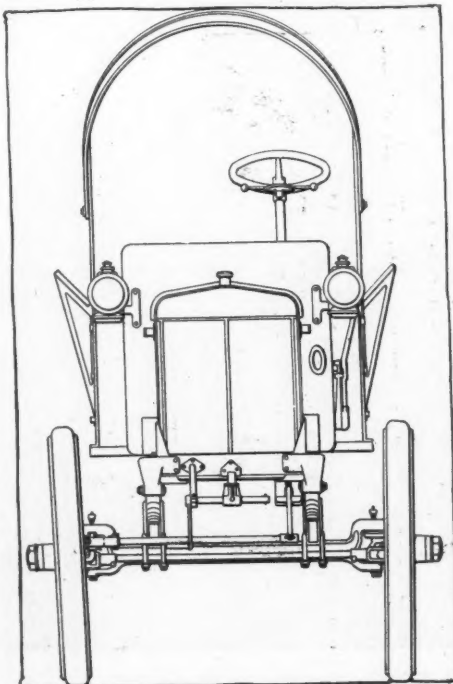
The island of Porto Rico has a population of approximately 1,114,000 and a total area of 3,600 square miles, the population being distributed all over the island, with the largest cities and towns near the coast. The density of the population is greater than any other sub-division of American territory, with the exception of Rhode

Island, Massachusetts and New Jersey. The island is sub-divided into sixty-six municipalities, and the incoming supplies and outgoing products pass through these towns.

Although there are railroads on the islands, the transportation of freight between the coast and the interior is at present carried on almost entirely by means of bull carts, so it is believed that the installation of a motor service by the Porto Rico Motor Co. will be a paying venture. The freight rates vary from 15 to 40 cents per mile. At the present time there are forty-five motor trucks on the island and two or three truck companies, but none of them has as yet tried to inaugurate anything like a first-class truck service for the transportation of freight.

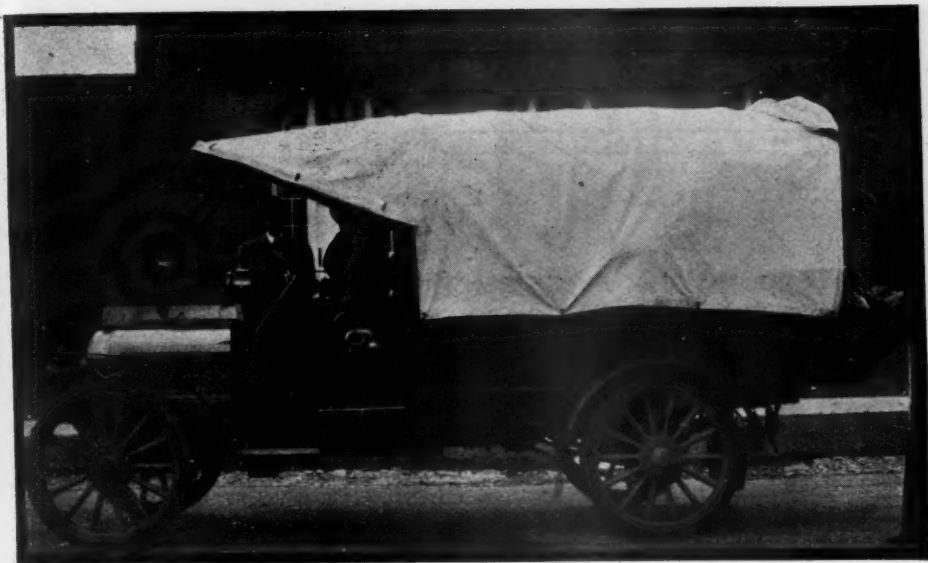
The new Porto Rico Motor Co. proposes to operate a system that will be split into six divisions, with garages located at San Juan, Caguas, Ponce, Arecibo and Guayama. Because of the mountainous conditions the type of truck required is said to be one with a body 12 feet long, 6 feet wide and 6 feet high, capable of carrying 10,000-pound loads. The maximum limit guaranteed by the government for bridges on the roads is 8 tons for one vehicle.

The greatest volume of traffic is found in the central portion of the island, which accounts for the initial installation being confined to the section between San Juan, Guayama, Ponce and Arecibo. No provision has been made for operating trucks in the neighborhood of Manati, Ciales and Morobis. The reason for this is that all hauling to and from Manati and Vega Baja is done by the railroad and the road between Manati and Vega Alta is not completed.



FRONT VIEW OF SAMPSON ARMY TRUCK





MACK TRUCK SUBMITTED FOR GOVERNMENT TEST

## Maine Lumbermen Find Trucks Useful

**During Past Winter Power Wagons Proved Their Utility by Hauling Logs Out of Woods—New Tractor Appears—Drags Four Loaded Sleds—Commercial News**

MAINE lumbermen have been making good use of motor trucks and tractors, using them to haul logs out of the woods the past winter. No matter how rough the going the motor trucks have hauled many logs through the woods to the edge of the streams in better time than horses. A. O. Lumbar, of Waterville, Me., recently invented a new tractor and for a demonstration it hauled four sleds loaded with cordwood through the city streets. It has a speed of about 8 miles an hour, weighs about 7 tons. The rear wheels are fitted with cleated shoes to give traction in winter. The total load carried was about 7 cords of wood and the entire affair looked like a railroad train.

### IN THE MARKET

An appropriation of \$3,000 has been secured from the council at London, Ont., for the purchase of a car for Fire Chief Aiken.

St. Paul proposes to buy a flying squad wagon for the police similar to the fire squad wagon. The fire commissioners propose to buy a 120-horsepower motor fire engine to cost from \$8,000 to \$10,000, probably to be built by a St. Paul company.

The New Orleans postoffice department has authorized the use of motor cars in making deliveries and collecting city mails. Trucks will be installed for handling mail to and from railway stations and docks.

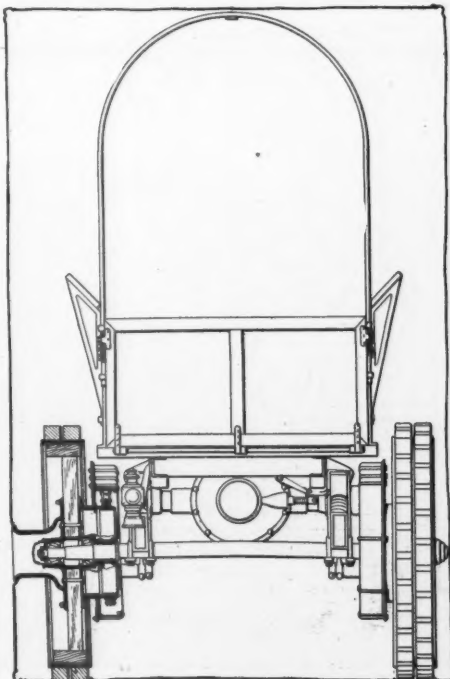
Mayor John F. Fitzgerald, of Boston, urged by the United Improvement Associations to diminish the fire hazard, has sent to the city council an order for an appropriation for \$50,000 for which to purchase motor fire apparatus.

The New Orleans sewerage and water

board has called for bids for three light cars.

The purchase of a complete motor equipment for the fire department, and the sale of all horses, is recommended by Mayor O'Neill in a message to the common council of Auburn, N. Y.

Four more modern motor fire apparatus will be added to the present equipment of Worcester, Mass., in a short time, an order for the finance committee of the city government to consider the advisability of providing \$25,000 for cars of the combination hose and chemical class having been passed by the joint standing committee on



REAR VIEW OF SAMPSON ARMY TRUCK

fire department. The net cost of the four, the committee believes, will be reduced about one-third by the sale of horse and apparatus after the more modern type has been secured.

### MAKES AN R. F. D. TEST

Recently a test was made on one of the R. F. D. routes running out of Eldorado, O., to see how much more efficient as well as economical was a motor car in place of a horse and wagon. The car which made the test was a Brush runabout. The distance was 26¼ miles and the run was made in 2 hours 35 minutes, making 125 stops. The motor never was stopped from the time it was started in town until the car was placed in the shed after the run. The cost of gasoline and oil for this trip was about 14 cents.

The R. F. D. carrier who has been covering this route has been compelled to keep two horses at a cost of about 60 cents a day, and it usually took him about 6 hours to make the run with one horse and wagon.

### ANOTHER ARMY TEST

Word has been received at La Crosse, Wis., that the war department is to conduct a severe test to determine the introduction of the motor truck and the abolition of the army mule. A run will be made from Washington, D. C., to Sparta, Wis., near La Crosse, and the station of the United States military reservation of the Northwest, with mail as the freight. The test will be held early in the summer, when the infantry and artillery regulars from all middle western posts hold their annual field encampment at Sparta. The cars that will be used for the test are the product of the Four Wheel Drive Auto Co., of Clintonville, Wis., which is building pleasure and commercial cars, using the Besserdich & Zachow patents.

### ADDED TO TRUCK FIELD

The Driggs-Seabury Ordnance Corporation is planning to launch itself into the motor truck field, its first venture of this kind. The corporation's plant is in Sharon. It is owned largely by Pittsburgh men. About twenty trucks of a new type are being completed at the works, the sample cars being of the 3, 4 and 7-ton variety. The company plans an output of from 600 to 700 trucks the first year. New equipment and shop plans are being laid out.

### CITY GARAGE FOR ATLANTA

So heavy have become the motor holding of Atlanta, Ga., that the finance committee of the city council has decided that a city garage must be established. Here all the municipal machines, except those of the fire department, will be stored and repaired. It also was suggested that the motor cars of the city be standardized, which doubtless means that hereafter one make will be decided on and only cars of that make purchased. It is felt that this move will lessen the repair problems, make it possible to keep a supply of parts on hand and make for economy.



# From the Four Winds



**ATLANTA Climb Postponed**—The hill climb at Atlanta, Ga., has been postponed to May 4.

**Coast Likes King Drag**—The use of the King drag for temporary improvement of dirt highways is being strongly advocated by many good roads enthusiasts on the Pacific coast, including Judge J. T. Ronald, president of the Pacific Highway Association.

**New Club in Washington**—With a charter membership of twenty-two, the Davenport Automobile Club, of Davenport, Wash., has been organized. Heading the new organization is F. W. Anderson. The vice-president is Dr. R. P. Moore. Charles Jarvis is secretary and Mayor F. E. Denison will handle the funds.

**Another Wisconsin Club**—A country motor club is being organized at Waukesha, Wis., by A. L. Blackstone, who had succeeded in interesting nearly 100 owners in the city and county. The main object will be to improve highways, which will include lending moral and financial assistance to the Oconomowoc-Milwaukee Good Roads Association.

**Must Go to Congress**—The only hope for relief of motor car owners of Washington, D. C., from the wheel tax law lies in an appeal to congress, is the opinion given by Judge James L. Pugh, in the district branch of the police court. The cases set for trial April 7 before Judge Pugh of motorists who refused to pay the tax, have been postponed until April 17.

**Mayor Chosen President**—Mayor Charles E. Hatfield, of Newton, Mass., was chosen president of the newly formed Newton Automobile Club when it was organized a few nights ago. President Lewis R. Speare of the Massachusetts State A. A. and a resident of Newton, was instrumental in getting together about fifty motorists of the city and they agreed to form the club.

**Detroit Announces Cadillaqua**—One of the biggest seasons of summer outdoor sports ever held in this country will take place in Detroit during the week of July 22, when the big water fete and carnival celebrating the Michigan city's two hundred and eleventh anniversary will be inaugurated. Nation-wide publicity is being given to Cadillaqua, which is the name of the celebration, and particular attention will be devoted to motorists and to devotees of yacht, motor-boat races, canoe races, aeronautics and amateur swimming. One of the big features of the week will be a motor car parade. Most of the principal cities in the western and southern and middle United States will conduct motor club runs to Detroit during the Cadillaqua week. Accommodations have been ar-

anged for 5,000 visiting motorists and parking places have been put aside for that number.

**St. Louis Wants Tour Start**—St. Louis is after the start of the 1912 A. A. A. tour if one is held. The Automobile Club of St. Louis has written to the A. A. A. asking for the start. Chairman A. G. Batchelder, of the executive committee of the latter organization, wrote back that St. Louis was almost assured of a night stop, at least, on the tour. The club, however, is not satisfied and is working hard to get the start of the big event.

**Doctors Protest**—The physicians of Taunton, Mass., comprising the Taunton Doctors' Club, have taken up the cudgels against the proposed raise in fees for the use of motor cars in the Bay State. At a meeting the club officials drafted a letter expressing their sentiments in no uncertain terms, and copies of these have been sent to the members of the legislature from that district. The Taunton Automobile Club, too, has also taken up the matter to fight against the proposed rates.

**Ohio's March Report**—The month of March was an active one for the Ohio state motor car department. During the month owners to the number of 6,400 were registered and chauffeurs to the number of 550 were licensed. The total receipts for the month were \$26,836.21. Comparing the number of registrations with those of the previous year one finds that April 1, 1911, there were 26,000 cars registered, while on April 1, 1912, there were 33,000 cars registered, an increase of 7,000. Registrar Shearer estimated that there will be at least 65,000 cars registered in the

Buckeye state during the present year. The receipts for the 3 months ending March 31 were \$141,810.31.

**Wire Wheels in Grand Prix**—The following concerns have decided to use Rudge-Whitworth detachable wire wheels in the race for the grand prix of France: Peugeot, Lorraine-Dietrich, Hispano-Suiza, Sizaire-Naudin, Rolland-Pilain, Alcyon, Cote and Mathis.

**Minnesota Registrations**—License tags are being issued by the secretary of state of Minnesota at the rate of 500 a day. The total for the year is 12,400 compared with 19,400 for last year in all. Chauffeurs are to be examined April 16 at Alexandria, April 17 at Fergus Falls, April 18 at Little Falls.

**After Delinquents**—With nearly half of the owners in New Albany, Ind., delinquent in the payment of their city license fee, Chief of Police Green, who by virtue of his office is city license inspector, has issued orders to the members of the police force to arrest all persons found on the streets with cars on which the license tags are not attached.

**Wolverines Seek a Home**—The Wolverine Automobile Club, of Detroit, has appointed a committee to examine sites and building plans, with a view to recommending some sort of club home. At present, the club has quarters in the Griswold house. These will undoubtedly be retained. The organization contains a large number, however, who would appreciate a club house some distance from the city, on some good road—somewhat on a similar plan to that of the Automobile Club of Detroit which maintains an exclusive or-



WHAT THE MOTORIST SEES NEAR BUTTE, MONT.



ganization with a club home on Pine Lake in Oakland county. The committee has held several meetings but has made no report as yet.

**Sociability Run Planned**—A sociability run is being organized by the Automobile Club of Washington. It will be run May 18 and the indications are 300 machines will be in line, as the entries are coming in fast. It is planned to have President Taft or Vice-President Sherman set the secret time for the run.

**Gophers Pick Executive Committee**—The executive committee of the State Automobile Association has been selected as follows: F. M. Joyce, Minneapolis; Reuben Warner, St. Paul; J. H. Hohmann, Mankato; E. L. Thornton, Benson. O. P. Huntington, of Luverne, was chosen second vice-president to take the place of E. L. Thornton, resigned.

**No New Haven Climb**—According to Attorney C. M. Robinson of the New Haven Automobile Club, there will be no hill-climb under the auspices of the club at New Haven, Conn., this year. According to Mr. Robinson the hill-climbs have been expensive and they have been run at a financial loss to furnish amusement to a number of people who never have to pay or never contribute anything towards the events. For that reason, he says, the New Haven Automobile Club will not run any more such contests.

**Bridgeport Shows Growth**—At the annual meeting of the Automobile Club of Bridgeport, of Bridgeport, Conn., Frank T. Staples was unanimously re-elected president. The other officers elected are: Vice-president, Ralph M. Sperry; secretary, Frank W. Bolande; assistant secretary, Herbert M. Lyon; treasurer, L. B. Powe; governors for 2 years, A. K. L. Watson, F. D. Beker, G. F. Bushnell, G. S. Hadley, F. A. Strong and J. E. Boyle. Secretary Bolande reported that the member-



DELAUNAY-BELLEVILLE CAR, SAID TO BE LARGEST IN WORLD

ship list had reached 488 during the past year, making it the largest club in the state of Connecticut.

**Election in Massachusetts**—The annual election of the Webster Automobile Club, of Webster, Mass., resulted as follows: President, Alexander N. Raciot; vice-president, Dr. Joseph N. Roy; secretary, Edward Brodeur; treasurer, Arthur G. Pattison; directors, William Winter, Ralph Hill, John T. King and Patrick Prout.

**Evils of Tipping**—During the discussion of the anti-tipping bill, which recently was passed by the Mississippi legislature, one of the arguments which had much to do with the carrying of the measure was that tips were responsible for the percentage of criminality among chauffeurs. It was claimed that many owners of taxicabs and other public motor cars received no salary, but had to depend on the tips for their remuneration. It was held that

such employment did not appeal to honest men and tended to the necessity of filling such positions with unscrupulous persons.

**Gettysburg Road Plans**—State Highway Commissioner Bigelow, of Pennsylvania, states that it is his purpose to have the road between Harrisburg and Gettysburg completed before the fiftieth anniversary of the battle of Gettysburg in 1913. It is expected that bids will be asked at once for the building of the road.

**Run for Chalmers Owners**—The annual Chalmers owners' consistency tour which is held in Colorado by the McDuffee Motor Co., Denver Chalmers agent, has been set for June 13-15. Heretofore the event has taken place in the fall, but Manager McDuffee has decided that an early summer run is more desirable. Canon City has been chosen as the destination of the tour and elaborate plans have been made for the trip from Denver.

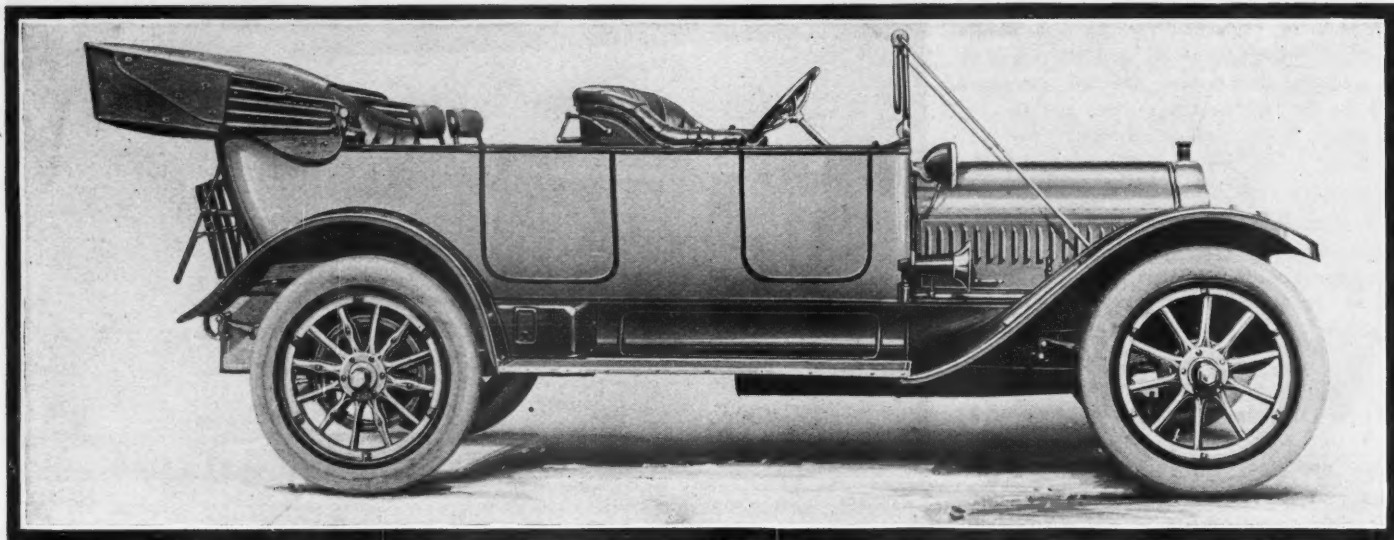
**Like Elwell Road Law**—Motorists are interested in the upholding of the new Elwell road law in Minnesota by which roads may be built at once, the cost to be paid in small installments for a long period, the state paying half, the county one-quarter and benefited property one-fourth. Bonds are issued to provide the funds. It is estimated that the result of the bill's passage will be a tremendous amount of trunk road building throughout the state of Minnesota.

**World's Biggest Car**—What is declared to be the biggest touring car on the road has just been delivered to the chief inspector of French finances by the Delaunay-Belleville company. It is a six-cylinder model developing 160 horsepower, and having a wheelbase of 198 inches. The car carries an eight-passenger limousine body by Vinet, of Paris, is fitted with twin tires on the rear wheels, and has among its equipment electric head and side lamps and a powerful swinging acetylene searchlight on the dashboard.



THIRTY-THREE PER CENT GRADE NEAR BUTTE, MONT.

# White Six-Cylinder Motor Cast en Bloc



WHITE SIX-CYLINDER MODEL GF CHASSIS WITH SEVEN-PASSENGER TOURING BODY

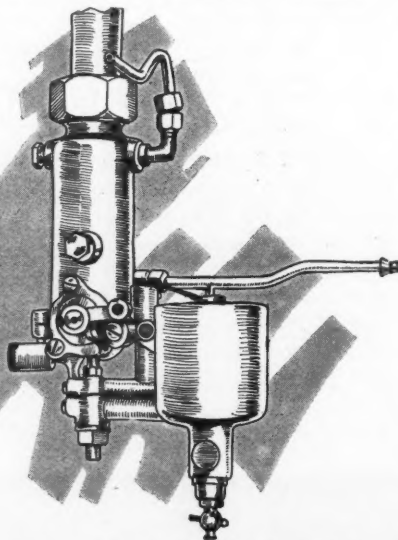
**L**ATEST among the recruits to the ranks of six-cylinder cars is the new White six. Always an exponent of monobloc casting, in its four-cylinder motors, the White company has extended that construction to its six. Though the en bloc cylinder casting is the chief feature of the new motor, it has other points of advanced design. One of these is the ratio of bore and stroke, the latter being 1.35 times the former. This does not constitute a departure for this make of car, as the cylinder dimensions,  $4\frac{1}{4}$  inch bore and  $5\frac{3}{4}$  inch stroke is the same as that in the four-cylinder model 40 and is even a smaller 30. The new model is called the G F.

## Features of Motor

The monobloc construction permits the use of a ball-bearing crankshaft, only three bearings being necessary to carry the nickel-steel crankshaft. The intake passages leading to the cylinders and exhaust passages from the cylinders are included in the waterjacket casting, consequently as the engine warms, the heat of the water jacket is communicated to the intake passages to assist in vaporizing the mixture. The result of the single casting of the motor with the exhaust and inlet manifolds as an integral part of the cylinder head makes a particularly clean-looking motor. The single inlet pipes from the carbureter and the single exhaust pipes and water pipe clears the motor of all superfluous connections and the impression of care in finish is enhanced by the method of carrying the ignition wires in a conduit above the motor.

Aside from the fact that there are six cylinders instead of four the motor differs but little from the four-cylinder motors of White manufacture. The cylinders are of the L-type with intake and exhaust valves on one side of the engine actuated by a camshaft within the crankcase. The en-

tire valve mechanism is enclosed by an easily removable side plate which makes the valve springs completely accessible.

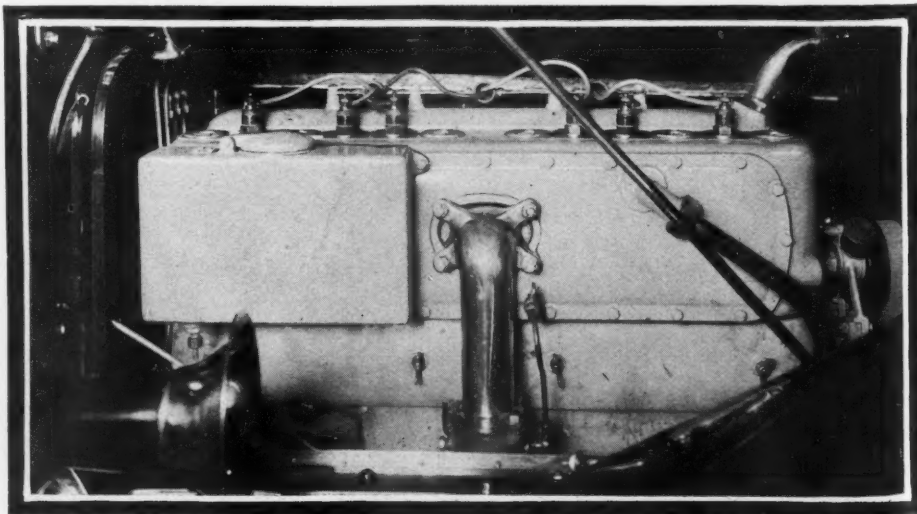


CARBURETER ON NEW WHITE SIX

The valves themselves may be removed by simply unscrewing the plugs located in the upper valve chamber. Cooling is obtained by a gear-driven centrifugal pump and cellular radiator with a belt-driven fan directly behind it. A secondary fan is supplied by the spokes of the flywheel and clutch which are cast in fan form to maintain a draft under the hood.

## The White Carbureter

The carbureter is of White design and is waterjacketed. The air valve is graduated to automatically change the supply to give correct mixture at all speeds. For hand-starting a compression relief is fitted. This is a lever located on the front of the radiator by which the camshaft is shifted endwise so as to lift the exhaust valves off their seats. Ignition is by means of a high-tension magneto alone, which is gear-driven from the crankshaft. Lubrication of the motor is by combination of crankcase splash and positive feed. Direct feed to each of the main crankshaft bearings



RIGHT SIDE OF WHITE SIX-CYLINDER MOTOR



is obtained from a gear-driven pump from the oil reservoir. The connecting rod bearings are supplied by oil-ways cut through and carried on the crankshaft.

Aside from the motor, the only respect in which the chassis of the six-cylinder car differs from the four-cylinder model is in the extreme length of the wheelbase and size of the tires. The wheelbase is 132 inches while the tires are 37 by 5 inches in size on all four wheels. The transmission of this model like that of the others includes a leather-faced cone clutch which has the feature that the leather is attached to the clutch chassis by through bolts which may be removed easily to renew the leather. Four speeds are provided in the gearset with direct drive on the third speed. The propeller shaft is provided with two universal and one telescopic joint. This prevents road strains from reaching the engine or gearset housing.

The brakes are external for the service and fiber lined while the emergency brakes of the internal type have metal-to-metal contact. The frame is of heat-treated pressed steel, narrowed in front of the dash. The springs are semi-elliptic in the front and three-quarter elliptic in the rear. The rear axle is of the semi-floating type in which the differential housing and right and left axle sleeves are supported by a heavy truss extending from the ends of the axle under the differential housing. All gears are easily accessible by removing the cover on the housing. The live axle shafts are of chrome-nickel steel, heat treated. The gears may be removed without splitting the housing of the differential gear mechanism.

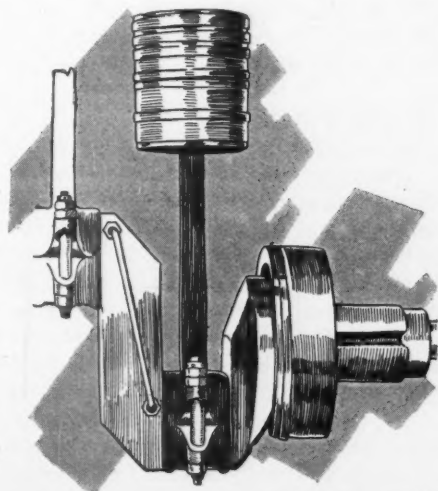
#### Bodies and Equipment

Three bodies are fitted on the chassis, a limousine, landaulet and berline limousine. The chief feature of the equipment of these cars is the White electric self-starter which also provides current for a complete electric lighting system as well as an electric signal. The combined starting and lighting system is entirely separate from the ignition system. The chief unit is a motor generator which, when run-



STARTING AND LIGHTING BATTERY HUNG FROM CROSS FRAME

ning as a generator charges the storage batteries at 18 volts, charging nine in series. In starting the engine, it runs the motor on 18-volt current from the battery up to 200 revolutions per minute. It is driven by a silent chain from the magneto shaft. The lamps are so connected that current is delivered to them at 8 volts.



OILING OF CONNECTING ROD BEARINGS

The starting of the motor is accomplished by simply throwing a knife switch on the dash. When the engine has started the motor generator is driven as a generator to charge the battery.

#### Starting and Lighting Battery

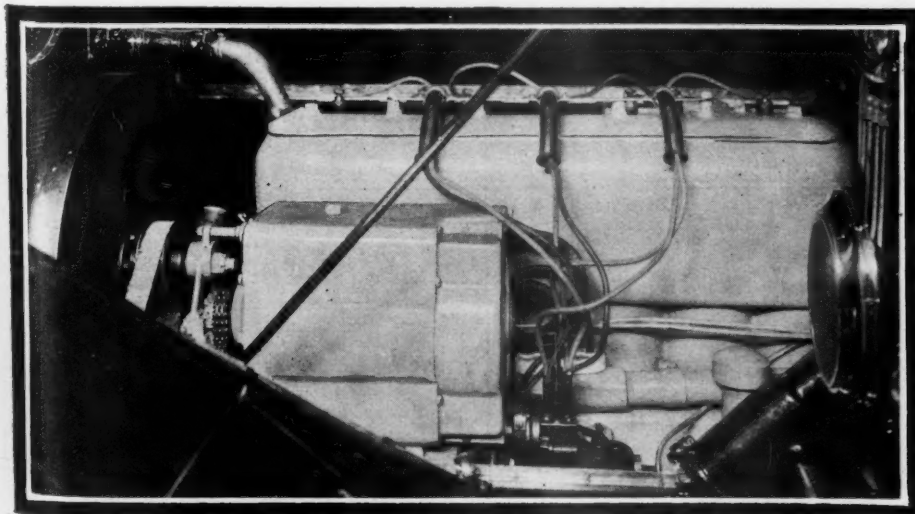
Particular attention has been paid to the installation of the storage battery. One of the illustrations shows the method of mounting the battery which is swung in stirrups from cross members of the frame. On one of the cross members there is mounted a terminal junction box into which the connection from the battery are sweated while the wires to lights and generator are connected at the same point by screws. The wires are carried in iron conduits on the frame of the car. The same illustration shows the installation of the Gabriel snubber attached to act as a shock absorber.

#### MOTOR CAR LITERATURE

A particularly interesting booklet, published by the Farmer, Minneapolis, Minn., and entitled "Who Buys the Most Automobiles in Minnesota—the Farmer or the City Man," gives a complete report in tabulated form of the number of motor cars in use in Minnesota and the number of each make in the state. Some interesting deductions are drawn from the figures.

Containing 207 pages describing in tabular and pictorial form the various models made by members of the Automobile Board of Trade, the annual hand book of that organization has been issued. This year the book covers 165 models of pleasure cars and twenty-eight commercial cars of various types. The board of trade consists of sixty-two manufacturing companies. Besides the car descriptions the book contains the roster of the organization, committees and a series of catalog request blanks as heretofore.

The Thompson Mfg. Co., Newark, O., has issued a booklet in which is featured its hose clamp for use on radiator hose, and which the makers claim can be detached without removing the hose.



WHITE SIX MOTOR SHOWING MOTOR-GENERATOR INSTALLED



# The Motor Car Repair Shop

**W**HEN the gasoline feed pipes break, either through accident or carelessness of a workman, the rupture usually occurs at or near the union where the pipe is joined to the supply tank, or at the lower end near the carbureter. Such places are not easy to get at for repairing a break, especially if it should occur on the road. It also will be found difficult to join the broken ends if the break is close up to the union.

Few drivers, if any, carry taps or dies for thread-cutting while on the road and it will be found impossible to join the pipe to the union without first threading it. However, if the driver has the foresight to provide plenty of binding tape and a ball of cotton twine he can make a quick temporary repair that will last for many miles, or until a permanent repair can be made.

The writer recently had occasion to make such a repair while on the road. The gasoline pipe had broken off close to a union and as there were no suitable tools in the car to make a permanent repair, the following improvisation was resorted to. About 3 yards of cotton twine was thoroughly waxed with a piece of beeswax that happened by some chance to be in the tool box. The broken ends of the pipe then were pushed up close together and the waxed twine wound round and round on each side of the break close up to the union, completely covering the rupture. After the loose ends of the string had been thoroughly tied, some ordinary black gummed lineman's binding tape was wound over the twine and for a short distance along the pipe on either side, completely covering it with several layers of the tape. Since the break was so close to the union this also had to be covered by the tape in order to secure a good hold for the binder. Make shift as this repair may seem, nevertheless it proved to be quite secure and leak-proof, since the car was driven about 50 miles with the gasoline pipe in this condition.

## An Auxiliary Cooler

Just to show what can be done in the way of an efficient improvised, quick repair job on a car, the following is related from the experience of an owner who does his own repairing in his own private garage.

The car in question had a radiator that overheated on long, hard drives and often ran short of water very quickly. This contributed to inefficient cooling of the motor and frequent stops had to be made in order to provide the radiator with a fresh supply of water. This was necessarily very annoying so the owner adopted the following method of circumventing the trouble.

## Repair for Broken Gasoline Pipe—An Auxilliary Cooler—Valve Grinding—Testing Compression

A specially-shaped metal can A, Fig. 1, 4 by 8 by 3 inches in size, holding about 2 quarts of water, was provided with an inlet B at the top and an outlet C at the bottom. This can was securely attached to the frame behind the radiator and the top connection attached to the inlet pipe D of the radiator, while the bottom connection was attached to the outlet pipe E leading from the radiator.

Small brass stop cocks F and G were placed both above and below the can so that it could be switched into or out of the cooling system at the will of the operator. As soon as the radiator began to heat up too much the reserve water supply was resorted to by simply opening the stop cocks so that the water could circulate. This proved very effective both for keeping the engine cool and for keeping the radiator water below boiling point. The metal can is so small that it does not materially affect the efficiency of the can in assisting to cool the motor by the air sucked in through the radiator.

## Grinding Valves

When misfiring or a loss of power due to poor compression indicates that the valves of a motor need grinding, the valves should be removed one at a time and ground in as follows: If the motor is an L or T-type remove a valve, and plug the opening between the cylinder and valve chamber with a bundle of cloth, having previously tied a string to the cloth and attached the string to some external portion of the motor, or at least raise the piston to the top of the cylinder so that the cloth will not fall into the cylinder. This is to block up the entrance and prevent emery from getting in and scoring the walls of cylinder and piston. If the motor is a valve-in-the-head type, with the valves contained in removable cages, these

precautions will not apply, for the cage can be removed and the valves then ground in.

If emery and oil is to be used in preference to the specially prepared valve-grinding compounds on the market, it is better to begin with a coarse grade of emery if the valve is badly pitted. The condition of the valve is shown very clearly after it has been thoroughly cleaned with gasoline and a brush, which, of course, should be the first operation. To begin, apply a coat of cylinder oil to the face or seat of the valve, distributing it with the tip of the finger; then dip the oily finger into the emery and apply that which adheres to it to the seat of the valve. Be careful to keep the stem of the valve clean, so that the guide will not be enlarged.

If a screwdriver or plain valve-grinding tool be used, the operator should hold the valve-grinding tool in one hand, take hold of the valve stem with the other, assume as comfortable a position as possible, and then begin oscillating the valve about a half a revolution back and forth on its seat in the cylinder or cage, occasionally lifting the valve from its seat and shifting it around. The lifting of the valve occasionally is to re-distribute the emery. When the pits are almost removed, continue the operation with flour of emery instead of the coarser grade; remove the valve oftener, applying more oil and less emery each time until a good seat is obtained all around; then finish up by polishing the seats with oil. Keresene is most effectively used in finishing the seat of the valve, and the smoother the finish obtained the less chance for carbon deposit.

## Testing Compression

To test the compression of a motor, one has but to crank it over slowly and note the resistance encountered as the crank passes each firing center. The resistance should be the same in all cylinders. If the compression is particularly weak in any of the cylinders, inject a couple of teaspoons of oil into the faulty cylinders, then test the compression again.

An improvement may indicate that the piston rings are stuck in their grooves, in which case they may be loosened up by injecting a gunful of a mixture composed of half kerosene and half alcohol, into the cylinder while the piston is down and allowing it to soak around the rings. If the motor is an old one or has seen hard service, it is possible that the piston rings or cylinder walls are worn or scored and need the attention of an expert repairman.

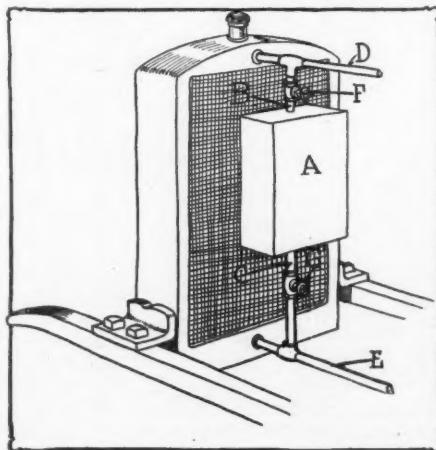


FIG. 1—AUXILIARY WATER SUPPLY





# Current Motor Car Patents



**CHAIN CARBON REMOVER**—No. 1,022,040, dated April 2; to Eugene S. Michener, New Castle, Pa. The device to which this patent applies has been on the market for some time. It is a chain contrivance designed to be placed in one of the cylinders of a multi-cylinder engine, and knocked about therein while the engine is operating under the power from the other cylinders. Thus it is expected to clean the carbon deposits from the interior of the combustion chamber. This cleaner comprises a chain made up of a number of wire rings loosely connected to each other, each ring being formed of a single strand of wire bent to provide a series of convolutions. Bow-shaped helical wire elements are loosely mounted on the terminal rings which are adapted to slide in either direction.

**Upton Anti-friction Bearing**—No. 1,022,163, dated April 2, 1912; to Colcord Upton, Baltimore, Md. This patent covers an anti-friction bearing comprising inner and outer race rings, rolling members between these race rings, and a retainer between the race rings which is provided with spaced rolls between flanges and the

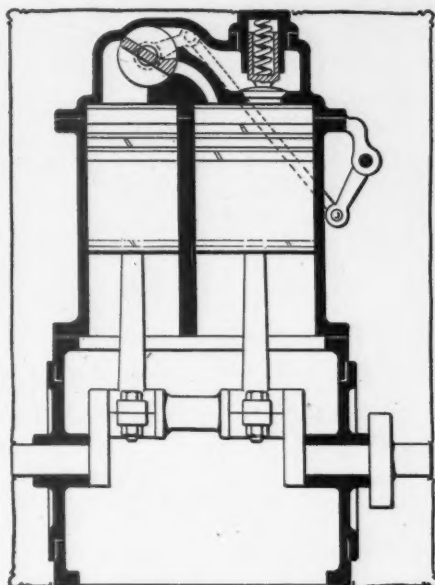


FIG. 1—BRAZELLE ROTARY-VALVE MOTOR

rolling members. The retainer is separated from the race rings, and free to rotate there-between. The separator rolls, at their ends, abut the adjacent inner faces of the flanges; and being free from

the retainer, assume required positions between the rolling members. The annular portion of the retainer between the flanges, retains the separator rolls from outward radial displacement.

**The Brazelle Motor**—No. 1,022,177, dated April 2, 1912; to Benjamin Brazelle, Kirkwood, Mo. This patent relates to an internal combustion motor having two cylinders of different sizes as shown in Fig. 1. These are connected by a passageway, one end of which is periodically opened and closed by a rotary or oscillating valve; and there is a chamber communicating between the two cylinders, whose opening into the smaller chamber is controlled by this same valve, and whose opening into the larger cylinder contains an automatic check valve. Means are provided for charging the smaller cylinder with an explosive mixture, and the larger cylinder with air. Means also are provided for igniting the charge in the smaller cylinder and for operating the rotary or oscillating valve to establish communication between the two cylinders simultaneously with the explosion. This in effect increases the volume of the cylinder.

## PATENTS ISSUED APRIL 2, 1912.

1,021,779—Motor Car Brake and Jack. Paul Janek, Cleveland, Ohio. Filed April 17, 1911. Serial No. 621,472.  
1,021,783—Wheel Rim for Pneumatic Tires. Carl George Kleinschmidt, Herne, Germany. Filed June 1, 1911. Serial No. 630,654.  
1,021,791—Explosive Gas Engine. Lewis R. O'Neill, Montclair, N. J. Filed April 29, 1911. Serial No. 624,123.  
1,021,796—Motor Car Fender. John P. Randerson, Albany, N. Y., Filed October 14, 1910. Serial No. 586,999.  
1,021,812—Starting Device for Explosive Engines. Edward M. Wood, Worcester, Mass. Filed April 7, 1910. Serial No. 553,914.  
1,021,816—Outer Cover for Pneumatic Tires. John Charles Barker, Leeds, Eng. Filed June 28, 1911.  
1,021,824—Oil Indicator for Motor Cars. John Elmer Campbell, New Castle, Pa. Filed September 27, 1911. Serial No. 651,598.  
1,021,843—Automatic Directing Means for Headlights. Joseph P. McElliott, Toledo, Ohio, assignor to The Automatic Movable Headlight Co., Toledo, Ohio, a corporation of Ohio. Filed September 19, 1910. Serial No. 582,760.

1,021,854—Backup Brake for Vehicles. Dennis T. Walsh, Ansonia, Conn. Filed December 8, 1911. Serial No. 664,539.  
1,021,875—Gearing. Charles L. Libby, Indianapolis, Ind. Filed February 6, 1908. Serial No. 414,504.  
1,021,879—Governor for Explosive Engine. Louis J. Monahan, Oshkosh, Wis., assignor to Termaat & Monahan Co., Oshkosh, Wis. Filed March 25, 1911. Serial No. 616,940.  
1,021,881—Electrical Interrupter Device. Charles Howard North, Cleveland, Ohio, assignor to The North Electric Co., Cleveland, Ohio, a corporation of Ohio. Filed November 19, 1908. Serial No. 462,806.  
1,021,889—Route Indicator. Jay B. Rhodes, Kalamazoo, Mich. Filed April 4, 1911. Serial No. 618,912.  
1,021,911—Tractor. William S. Boyd, deceased, Los Angeles, Cal., by David C. Boyd, administrator. Filed October 19, 1909. Serial No. 523,550. Renewed February 6, 1912. Serial No. 675,910.  
1,021,923—Universal Joint. Allen H. Fetzner, Gallon, Ohio. Filed June 3, 1910. Serial No. 564,764.  
1,021,939—Starting Device. James Mc-

Namee, Amsterdam, N. Y. Filed August 15, 1910. Serial No. 577,254.  
1,021,983—Cushion Tire. Albin Hajos, Chattanooga, Tenn. Filed August 10, 1910. Serial No. 576,436.  
1,022,015—Shock Absorber. James H. Woodring, Corry, Pa. Filed August 29, 1911. Serial No. 646,587.  
1,022,027—Hydrocarbon Engine. Hiram Hyde and Jack Gage, Geneseo, Kans. Filed May 8, 1911. Serial No. 625,788.  
1,022,087—Motor Car Starter. Charles D. Jenney, Indianapolis, Ind. Filed June 22, 1911. Serial No. 634,751.  
1,022,127—Tire. Edward Dettelbach, Cleveland, Ohio. Filed June 17, 1910. Serial No. 567,277.  
1,022,178—Internal Combustion Motor. Benjamin Brazelle, Kirkwood, Mo., assignor to Brazelle Motor Co., St. Louis, Mo., a corporation of Missouri. Filed July 16, 1910. Serial No. 572,235.  
1,022,192—Attachment to Spark Plugs. Henry C. Hemminger, Pontiac, Mich., assignor of one-half to Cassius C. Van Wagoner, Pontiac, Mich. Filed April 27, 1911. Serial No. 623,589.

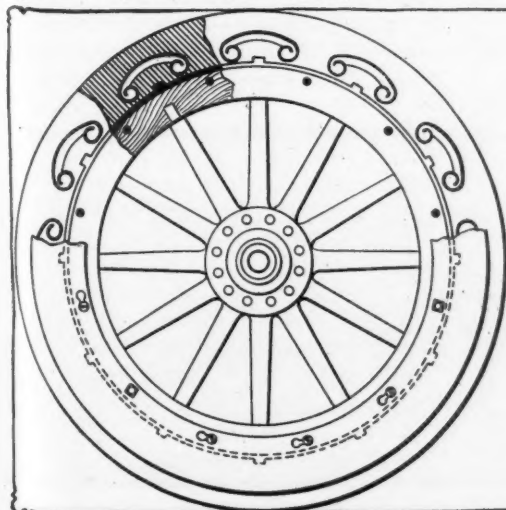


FIG. 2—ADAMS RESILIENT TIRE

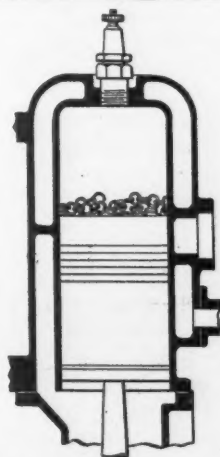


FIG. 3—MICHENER CHAIN CARBON REMOVER

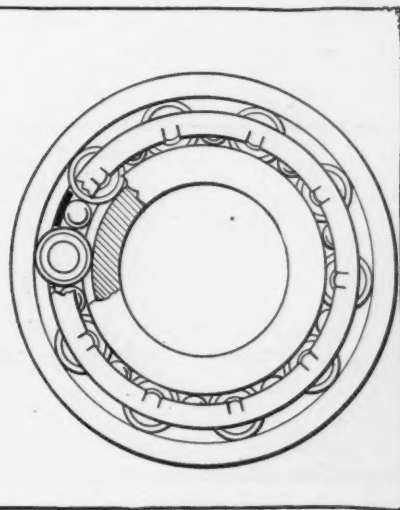
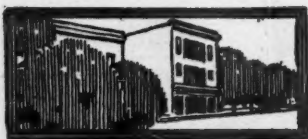


FIG. 4—UPTON ANTI-FRICTION BEARING



# Among the Makers and Dealers



PLANT OF GARDNER CARBURETER CO., SHREVEPORT, LA.

**ORD Breaks a Record**—The Ford Motor Co. for the month of March exceeded its production records, having shipped 8,004 cars in the 27 shipping days.

**Packard Almost Sold Out**—With several months of the 1912 season still to run, the Packard Motor Car Co. reports it has closed out its line of six-cylinder runabouts, 30 phaetons, coupes of all sizes, six and 30 limousines and landaulets. A limited number of six touring cars and phaetons, 30 runabouts and touring cars and 18 open cars remain to be sold.

**Pope-Hartford Prosperity**—An indication of the flourishing condition of the motor industry in the east is shown by the financial statement of the Pope-Hartford company and the readiness with which New York bankers advanced the company \$1,000,000 recently. The shipments up to January were \$350,000 in excess of a year ago for the same 5 months. The entire 1912 output has been sold and the company is now working upon its 1913 production. The substantial increase in the

working capital made possible by the sale of its notes will allow the company to go into the market and purchase its materials at discount rates for cash.

**Millionth Bosch Magneto**—Records of the Bosch Magneto Co., New York, show that on March 15 the millionth magneto was completed, while the demand is increasing to an extent that requires continual additions to the factory sites. April 1 found the production well on the way toward the completion of the two-millionth magneto. It was in 1888 that the first Bosch magneto came upon the open market.

**Reports on Central American Business**—Milton Kraus, president of the Great Western Automobile Co., has returned from a tour through the south and the islands and countries of Central America. Mr. Kraus reports that motor cars are not used as generally in Panama and Costa Rica and Central America as has been reported from time to time. The roads are only good in very restricted districts. One noticeable feature, however, is the fact

that wherever cars are seen south of the United States, the ones in use are the latest fore-door models.

**Sullivan Alco Supervisor**—George L. Sullivan, formerly traveling sales representative, has been appointed supervisor of the Alco branch houses in Chicago, Boston and Montreal.

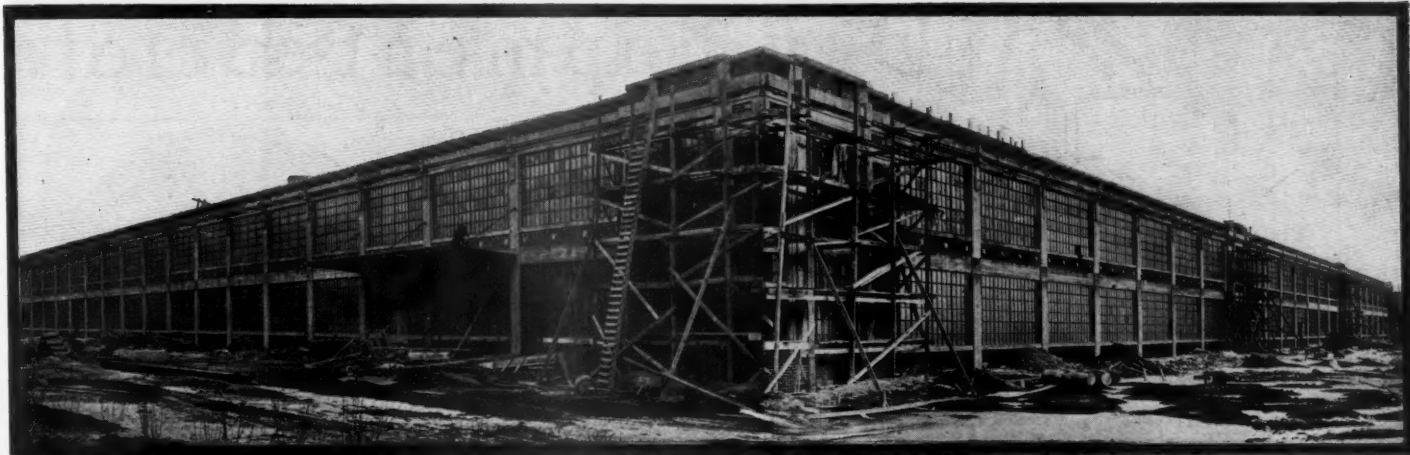
**Bigger Plant for Saxon**—Within the next 3 months the Saxon Mfg. Co., making lamps and horns, will be located in the five-story brick building formerly occupied by the Dow-Snell Co., on Cherry street, Toledo. The new location will give the concern five times the floor space of its present location and will enable it to employ 400 men, nearly double the number now employed. The entire output of the plant is taken by the Willys-Overland Co. of Toledo.

**Continental's Detroit Plant**—The new Detroit plant of the Continental Motor Mfg. Co., of Muskegon, Mich., which has been under construction for some time, is now nearing a state of completion, and will be in operation during the coming April. This plant will more than double the large capacity of the Muskegon factory, which has an annual output of 18,000 to 20,000 gasoline motors. It is situated on Jefferson avenue, adjoining the Hudson Motor Car Co. plant on the east, and is in that section of Detroit called Fairview. The general construction and style of architecture which is similar to that of the Hudson's company buildings, is fire-proof, of structural steel and re-enforced concrete, with steel window sashes, and all other details of the most improved types. A separate two-story office building will add the finishing to this new plant. The illustration showing the southwest corner of the main building does not give a fair idea of the size of the plant, for behind this building are the test houses, heat-treating plant, machine shop and the power plant, with an available 1000 horsepower. There will be more than 240,000 square feet of manufacturing floor space



DETROIT FACTORY OF THE McCORD COMPANY





NEW DETROIT PLANT OF CONTINENTAL MOTOR CO., OF MUSKEGON, MICH.

and the cost of construction will probably exceed \$1,000,000. The factory itself covers 12 of the 30 acres of ground already purchased. The Continental has no intention of abandoning its Muskegon factory for some time to come.

**Buy Old Oldsmobile Plant**—Morgan & Wright have acquired the old Oldsmobile plant, adjoining the tire firm's big factory. This is the plant from which the pioneer Detroit car manufacturers produced the curve-dash runabouts. More recently the plant has been the manufacturing headquarters of the Welch-Detroit Co., which was recently merged with the Marquette Co., of Saginaw. The Welch-Detroit Co. still retains part of the building in question.

**New Se-Ment-Ol Factory**—The Northwestern Chemical Co., of Marietta, Ohio, maker of Se-Ment-Ol and other motor specialties, has purchased the property of the Chapin pants factory, on Butler street, of that city, and is preparing to move into its new quarters at once. It is a large frame building, 41 by 128 feet, with two stories and basement. It gives 15,000 feet of floor space. The company is preparing to install a large number of new machines, such as mixers, package fillers, etc.

**Progress on Cole Plant**—The first \$100,000 wing in the series that will go forth to build for the Cole Motor Car Co. a big plant in the heart of Indianapolis has just been turned over by the contractors. With this move, President J. J. Cole has given his architect instructions to go ahead with the second of these \$100,000 wings. The wing just turned over is four stories high, of reinforced concrete and built so that the employes have plenty of light and comforts. The wing, 100 by 160 feet, stands in the rear of Cole factory No. 1. The second wing will be the same size and constructed west of wing No. 1. When finally completed the Cole organization will have a U-shaped building, 230 feet wide, 315 feet deep and four stories high. Provisions have been made in the construction so two additional stories can be added any time. The Cole plant is still using its three other buildings scattered

throughout the heart of Indianapolis and will continue to retain the sales department's commodious structure on North Capitol boulevard for the transaction of business other than manufacture.

**Richmond Trade Election**—At the meeting of the Richmond Automobile Dealers' Association, of Richmond, Va., by-laws were adopted, and the following board of directors elected: L. M. Folger, chairman; R. B. Allport, Mark R. Lloyd, B. A. Blenner and Boyce Bland. The association now has twenty-three active members on its roll.

**Motor Tradesmen Recognized**—Charles T. Jeffery, president of the Thomas B. Jeffery Co., manufacturing the Rambler, has been elected president of the Manufacturers' Association of Kenosha, Wis. William L. Yule, of the Badger Brass Co., and George H. Allen, of the American Brass Co.'s local works were elected to the board of directors.

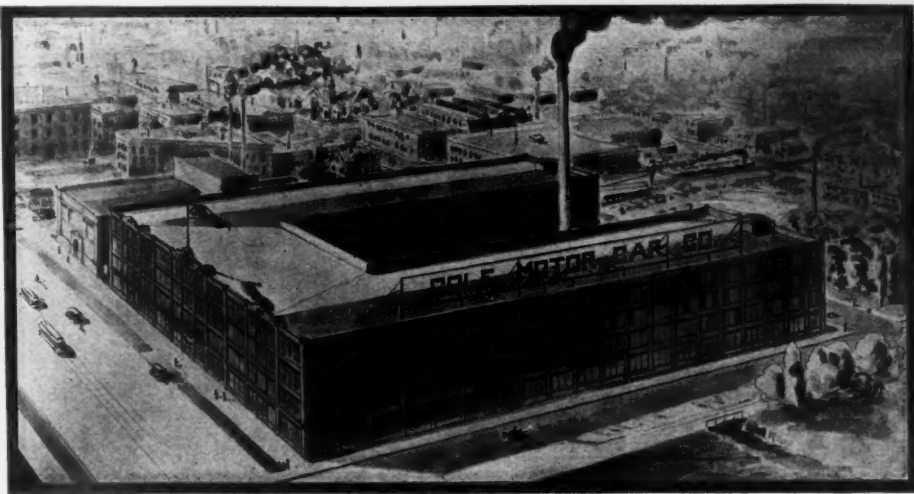
**Ford Dealers at Factory**—The largest trade gathering of the past few days was engineered by the Ford Motor Co., which, on April 2 entertained at the factory 150 of its dealers tributary to the firm's Chicago branch. The dealers came in a special train, spent the morning and afternoon at the mammoth Ford plant on Woodward avenue, lunched at the Log Cabin inn in

the same part of town, and sat down to an elaborate banquet at the Cadillac in the evening. Branch Manager T. J. Hay, of Chicago, was in charge of the expedition.

**New Empire Tried Out**—The Empire Automobile Co., which succeeded the Empire Motor Car Co., of Indianapolis, now has its model 25 on the streets. On last Thursday a test for speed was made and this car, carrying five passengers, is said to have showed 45 miles per hour on a road test.

**Expansion at Case Plant**—The Case company is building a new central power, heat and light plant at Racine, Wis., at a cost of \$75,000. Work will be started soon on extensive additions to the motor car works, where Case cars are built. The exact nature of the plans for this department have not been made known at this time.

**Piggins' Plant Starts**—The Piggins Motor Truck Co. has been incorporated at Racine, Wis., and is building extensive additions to its present factory. It will enter the commercial field with five models. The officers are the following: E. N. McNab, president; F. H. Piggins, vice-president; Charles R. Piggins, secretary and treasurer; George L. Lavery, Jr., sales manager.



AS COLE'S INDIANAPOLIS PLANT WILL LOOK WHEN FINISHED

# Development Briefs

## Davenport Design of Individual Electric Drive on 8-Wheel Gas-Electric Truck—Baseline Autowline

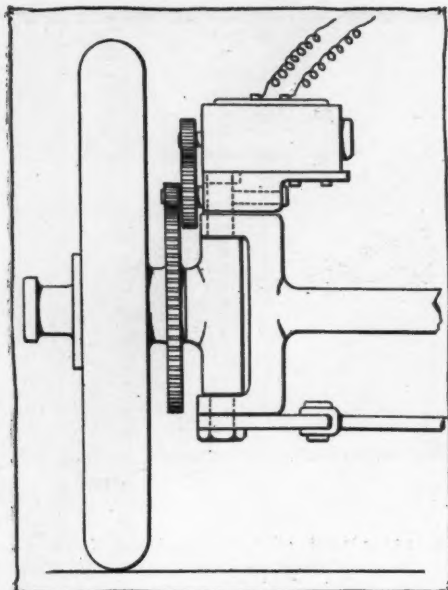


FIG. 1—DAVENPORT'S INDIVIDUAL DRIVE

### Vixen Files

IN Fig. 5 is illustrated a file in which the teeth, instead of being straight, as in the usual type of tools of this kind are semi-circular. The design of the teeth is said to be such that the semi-circular tooth prevents clogging and combined with a keen cutting edge produces a true sheering cut. This construction is peculiar to Vixen files, made by the Vixen Tool Co., Philadelphia, Pa. The deep semi-circular teeth on both sides of the file are said to give a formation that is scientifically correct, as the filings resemble the turnings from a lathe or milling machine. In the manufacture of ordinary files the blow necessary to form the teeth

has a tendency to injure the steel and often results in defective teeth. The Vixen file is manufactured by a process in which the teeth are cut one at a time with an end mill in the shape of a hollow cylinder. In comparing methods of manufacture it is stated that it takes 25 minutes to mill the teeth on a 12-inch regular-cut Vixen file, while the teeth on a bastard file of the ordinary type are formed in about 1 minute. It is stated that Vixen files may be resharpened from four to six times. All the ordinary grades of files are produced with the typical semi-circular tooth. The report of a test of these files on an automatic file testing and indicating machine showed that with a standard steel test bar the average in 3 tests on Vixen files gave 6.5 inches for the Vixen as against 1.7 inches for the ordinary file at a cost of 45 cents per inch for the Vixen and \$1.52 per inch for the ordinary file.

### Electric Eight-Wheel Drive.

A commercial car design with some very unusual features is illustrated in Fig. 2. The eight wheels are driven by individual motors located on the steering knuckle so that the motor swings with the wheel and does away with the necessity of uni-

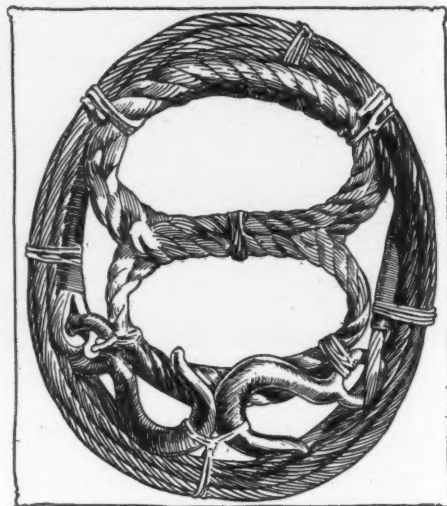


FIG. 3—BASELINE AUTOWLINE

versal joint and differential gear. Power is supplied by a gasoline-electric generating set. A detail of the individual drive is illustrated in Fig. 1. According to the present design of B. W. Davenport, of Minneapolis, Minn., the inventor, the truck will have an approximate length of 35 feet and a weight of 5,600 pounds. To eliminate the difficulty of handling such a large vehicle in crowded traffic the wheels are arranged so that the rear wheels can be turned automatically with the front wheels either in the opposite direction as indicated in the lower illustration of Fig. 2 for turning a corner,

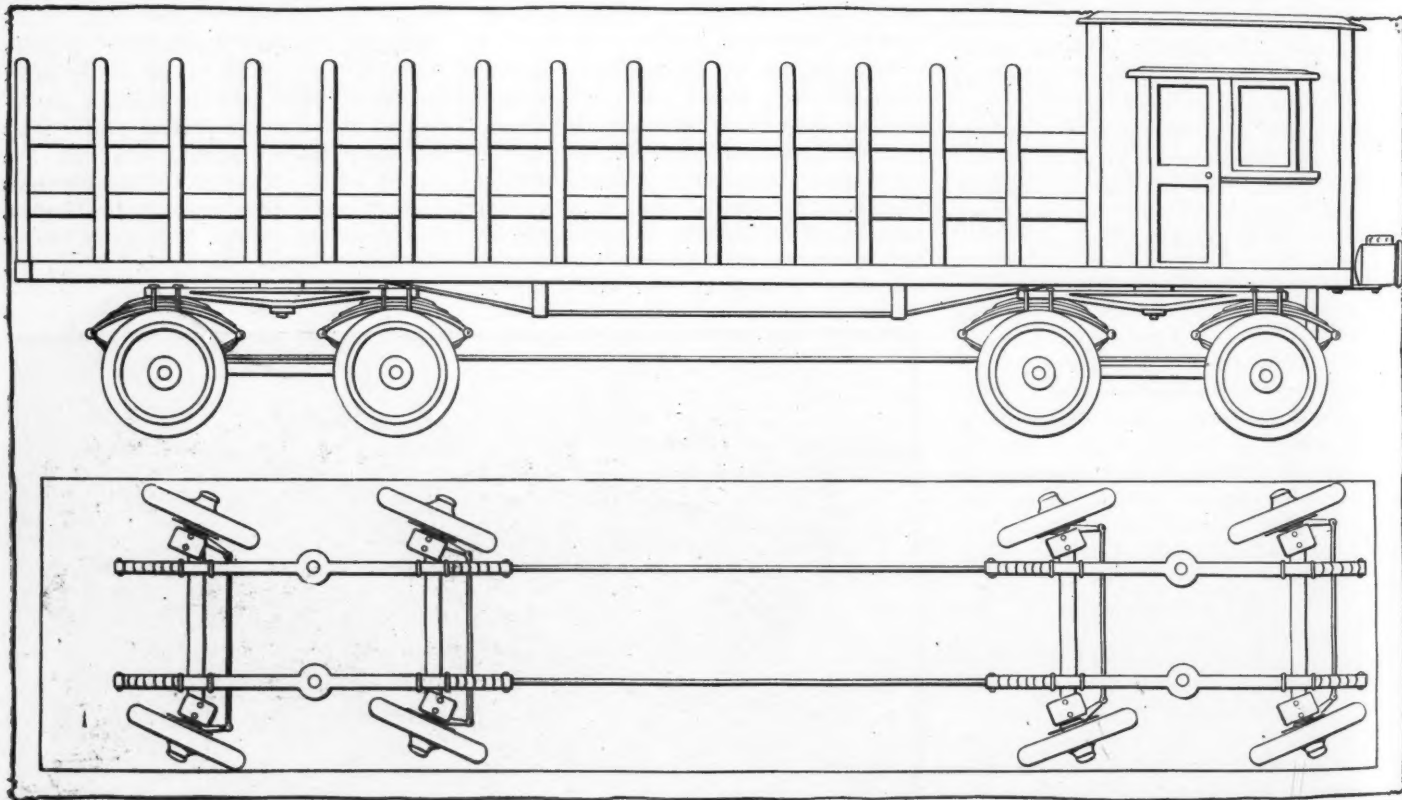


FIG. 2—SIDE VIEW OF DAVENPORT'S 8-WHEEL DRIVE APPLIED TO TRUCK. BELOW IS UNDER VIEW SHOWING INDEPENDENT STEERING OF FRONT AND REAR WHEELS



# Novelties for Motoring

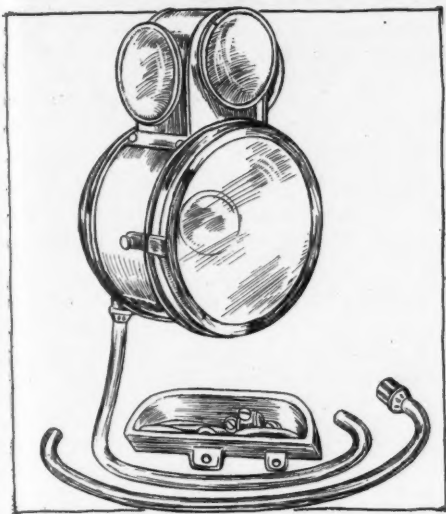


FIG. 4—BAC-2-LITE REAR SIGNAL

or in the same direction as the front wheels to permit the entire car to move sidewise at an angle of 45 degrees. One of the chief uses for which the car is intended is for public passenger service.

## Connecticut Timer.

In Fig 7 is illustrated the interior design of the latest ignition timer of the Connecticut Telephone and Electric Co., Meriden, Conn. Among the features of the timer are a dust-proof case, two ball bearings by which the shaft carrying the contact wheel holder is supported and which are adjustable from the outside without tools and while in operation. The wire connections are made by means of the quick-detachable terminals, recently described in these columns. A ground contact is assured on the shaft by a ball and spring illustrated in the lower part of the sketch. The contact blocks are imbedded in an insulating ring and have a V-shaped groove, the V groove insulating ring and contact block forming a continuous circular track for the contact wheel which is ground exactly to fit. A feature of this construction is that the timer can be completely disassembled without the use of tools. The flexible secondary arm shown in the middle of the illustration is adjusted to run very closely to the contact segment.

## Automatic Rear Flash Light

Bac 2 Lite automatic rear flash is the name of a combination of the ordinary tail light required by law and of a searchlight to illuminate the path of the car when moving backward. The lamp with its connectors illustrated in Fig 4 and consists of a 4-candlepower tail light mounted upon the body of a searchlight equipped with a 15-candlepower lamp and highly polished reflector. These two lamps are connected to the dynamo or storage battery so that when the regular light switch is thrown on the tail lamp is lighted. The more powerful lower lamp remains dark until the car

## Rear Automatic Searchlight—Connecticut Timer—Tourists Sideboards—Vixen Quick-Acting Files

is moved backward, at which time an automatic switch throws the rear searchlight into operation. The device is manufactured by the Bac 2 Lite Co., Dayton, O.

## Baseline Autowline

Those accustomed to touring over country roads, particularly in hilly districts, know the value of having a towing rope in the car with which to extricate it from difficulties. Ordinary manila ropes to be strong enough must be so bulky that they are often left behind. To provide a compact, strong rope for tourists' use the Broderick & Bascom Rope Co., St. Louis, is marketing a steel towing line called the Basline Autowline. This rope is made up of high-grade steel wires; weighs but 6 pounds and is only 5-16 inch in diameter. It will coil up flat so that it can be slipped under the seat cushion. In spite of its compactness it is claimed that it will pull a 4000-pound touring car up a 20 per cent grade. The rope is equipped with manila rope slings and steel hooks at each end.

## Tourist's Sideboard

To do away with the annoying features of stopping at roadside inns and country hotels and to provide hot home-made meals and all the necessary appurtenances for serving them on tour there has been brought out a picnic trunk called the Auto-Rest.

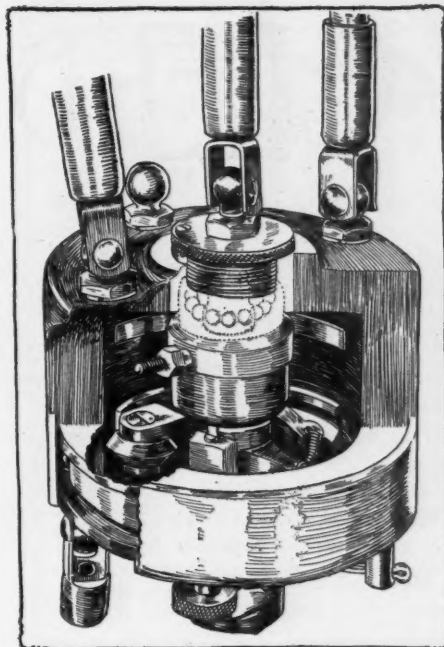


FIG. 7—VIEW OF CONNECTICUT TIMER

The trunk contains compartments in which there are a complete set of dishes, containers for hot cooked food and vacuum bottles for hot and cold drinks. When not required as a picnic trunk the entire equipment can be removed and two substantial suitcases substituted, making a serviceable touring trunk. M. C. Lilley & Co., Columbus, O., manufacturers of the Auto-Rest, also is making a portable cafe called the Buf-Aut. This carries materials for mixing and serving any of the drinks desired by the tourists. The Buf-Aut cabinet is about the size of a suitcase and the appurtenances include eight pint bottles, six drinking glasses, measuring glass, and so on.

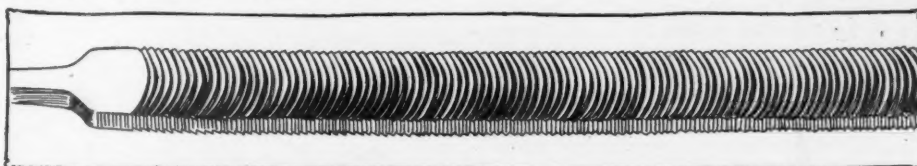


FIG. 5—ILLUSTRATING THE CURVED TEETH OF THE VIXEN FILE

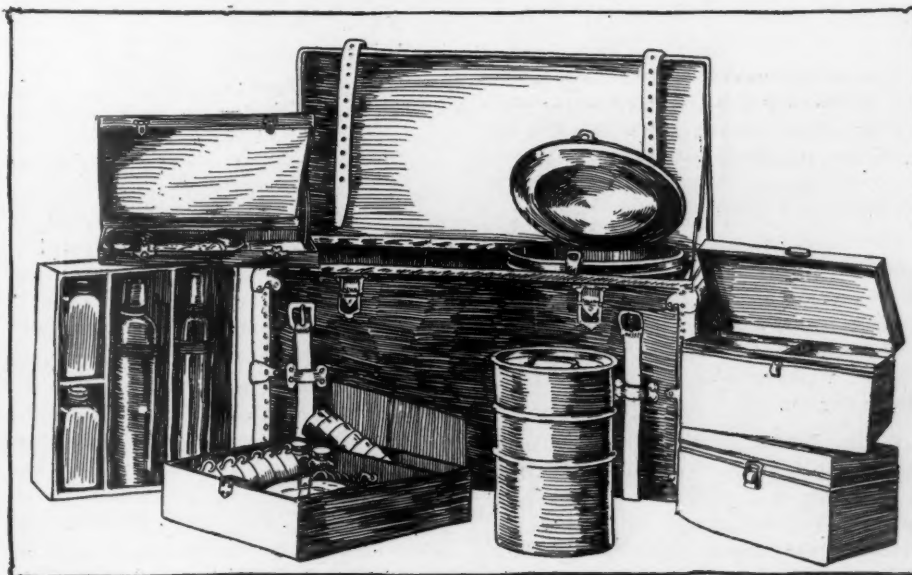


FIG. 6—AUTO-REST MOTORISTS' LUNCHEON OUTFIT



# Brief Business Announcements



**DENVER, Colo.**—The Cole Motor Car Co., Colorado Cole distributor, has moved from 1503 to 1546 Broadway.

**Cincinnati, O.**—The Central Motor Sales Co. has been formed here for the sale of the Brush, with salesrooms at 815 Sycamore street. T. A. Perkins has been named as manager.

**Philadelphia, Pa.**—The eastern and southern distributing agency of the Sandusky truck line has been secured by the Automobile Repair and Sales Co., Inc., 911-913 North Broad street.

**Des Moines, Ia.**—A. W. Eggeston, formerly with Beckley, Ralston & Co., Chicago, has opened up a supply and accessory business here under the name of the Central Auto and Supply Co., 310 Ninth street.

**Ada, Minn.**—The Norman County Auto Co. has been organized. The following have been elected officers for 1912: Peter Matson, president; D. C. Lightbourn, vice-president; Louis Hinze, secretary, and C. J. Lofgren, treasurer.

**St. Louis, Mo.**—The George C. Brinkman Motor Car Co. has opened a salesroom at 2818-20 Locust street. This salesroom has been built on a lot 50 by 136 feet. The Brinkman company has recently taken the National agency.

**Beloit, Wis.**—To cope with the growth of its gasoline tractor business, the Fairbanks-Morse Co., of Chicago, is building an 80 by 130 foot extension to its Eclipse works at Beloit. A new brass foundry is being completed.

**Jacksonville, Fla.**—The Seminole Motor Co., Cole agent in Jacksonville, has moved into its new salesroom at the corner of Main and Beaver streets. The service department will be retained in the old quarters at the foot of Laura street.

**San Francisco, Cal.**—The Matheson Sales Co., which heretofore has made its main offices in Oakland, has decided to make San Francisco its headquarters. The Oakland office will be maintained as a branch. The Warren car is handled by this company.

**Cincinnati, O.**—A selling agency has been opened here for the sale of the White gasoline cars at 1606-1608 Reading road. J. E. Huggins, from the parent concern at Cleveland, will be in charge of the new concern, which will be known as the White Motor Car Co.

**Walla Walla, Wash.**—That John D. Moore has faith in the inland empire of Washington as a motor market is shown by his selling his garage in Boise, Idaho, where he was general agent for the Overland for that section, and taking the agency of Walla Walla county, with head-

quarters at Walla Walla. Mr. Moore will be a sub-agent of the Harry E. Olive Co. of Spokane.

**Boston, Mass.**—Louis S. McCreary now has the New England distribution of the Grabowsky trucks, having taken it over recently, occupying the company's salesrooms on Pleasant street.

**Dallas, Tex.**—L. E. Whitmore has just been notified of his appointment as sales manager for the Franklin Automobile Co. in the territory including the states of Texas, Arizona, New Mexico, Louisiana, Arkansas and Oklahoma.

**Pittsburgh, Pa.**—The Pittsburgh-Chalmers Co. will spend about \$60,000 in the new plant to be erected in Oakland, at Forbes field. The ground was purchased last week for \$20,000. The display rooms, offices and garage to be built will cost \$40,000.

**Akron, O.**—The Swinehart Tire and Rubber Co. has made an agency connection in Los Angeles with the W. B. Guyton Tire and Rubber Co., 1013 South Main street, which will take over the agency privilege formerly held by the Los Angeles Vulcanizing Co.

**Providence, R. I.**—Manager John L. Snow, of the New England branch of the Peerless company, has established a branch in Providence for the sale of his cars and trucks in Rhode Island. In addition to salesrooms there will be a service station. The branch will be in charge of J. W. Breese.

**Seattle, Wash.**—The Packard Motor Car Co. is vacating the building it has occupied at East Belmont avenue and East Pike street to go into its new home at Twelfth avenue and East Pine. The Locomobile agency, handled by Thomas-McKay, 211 North Broadway, will take the building being vacated by J. T. Keena & Co., the Packard agents.

**Springfield, Mass.**—The plans approved for the new building to be erected on Dwight and Chestnut streets for the Morse-Readio Co. call for a six-story building with 78 feet frontage and 97 feet in depth. The first floor will be devoted to trucks and the other floors to general service. The company handles the G. M. C. trucks and the Stearns and American cars.

**Toledo, O.**—The Dennis Motor Co. has been incorporated under the laws of the state of Ohio with capital stock of \$25,000 to take over the business of the Rambler Motor Sales Co., of Madison avenue. The incorporators are: H. H. Dennis, G. W. Close, Allen E. Reid, S. S. Goodrow and John G. Meister. The company is to be located at the northwest corner of Madison avenue and Fifteenth street. The Dennis

Motor Co. is distributor in northwestern Ohio and southeastern Michigan for the Aleo, Rambler, Cino and Detroit electric.

**Bucyrus, O.**—Conklin Brothers, of Bucyrus, O., have established a taxicab business in Marion, O., with C. Drake in charge.

**Detroit, Mich.**—O. R. Hardwell, of the Detroit office of the Charles H. Fuller Co., has accepted the position of advertising manager for the Paige-Detroit Motor Car Co. of this city.

**Los Angeles, Cal.**—R. A. Wood has been appointed manager of the newly established Los Angeles branch of the Elmore Mfg. Co. C. W. Hobson will have charge of the Fresno, Cal., branch.

**Akron, O.**—C. W. Martin, Jr., of Detroit, Mich., has taken charge of the solid tire department of the Goodyear Tire and Rubber Co., of Akron, O. He has been connected with the southern forces of the Goodyear Co. for a number of years and previously was connected with Morgan & Wright.

**Winnipeg**—Walter Jackson has taken the western Canada agency from the General Motors Co. A new garage will be erected by the company which has been formed by Mr. Jackson and the company, which will be known as the Western Canada Motor Truck Co., will also conduct a hiring business.

**Boston, Mass.**—The Oldsmobile Boston branch will join the Back Bay colony in the Fenway this summer, W. J. Mead, from the factory, and Manager W. J. Fewell, of the local branch, having approved plans for a new building to be erected on Commonwealth avenue. The new building will be 100 feet long, 60 feet deep and three stories in height.

**Boston, Mass.**—W. T. Teagan, for the past 12 years manager of the Boston branch of the Goodyear Tire and Rubber Co., has been promoted to the position of New England district manager, having in charge the branches at Providence, Worcester, Springfield, Hartford and Portland as well as Boston. C. M. McCreary has been sent on to Boston from the factory as manager of the branch.

**Minneapolis, Minn.**—The White Bear Automobile Co., Sixth street and Franklin, will open its new \$80,000 garage about May 1, and a month later a new garage at Grand avenue and Grotto street, and possibly a third, on East Seventh street. The company will continue its present garage at 199 West Fifth street and one at White Bear lake. The Grand avenue place will be for electric cars, to be equipped at a cost of \$25,000 by the Columbia Electric Co. The White Bear company will be in-



corporated with large capital. A. J. Diamond, head of the present concern, is in control.

**York, Pa.**—The York Rubber Tire Co. has opened a room at 276 West Market street, and will deal in rubber tires and accessories.

**Ada, Minn.**—Two new companies have been formed here. The Norman County Auto Co. will have seventeen members. The other is the Ada Garage Construction Co.

**Winnipeg**—The Canadian Consolidated Rubber Co. is erecting a new warehouse which will be used as a storage warehouse for the Canadian tires, etc. The property has a frontage of 400 feet and a depth of 450 feet.

**Minneapolis, Minn.**—Charles J. Parker and Alex Robertson have bought the Western Motor Supply Co., 1018 Nicollet avenue, and will continue the business. Mr. Parker, manager for the Tri-State Rubber Co., handling Swinehart tires, will merge it in the Western Motor.

**Pittsburgh, Pa.**—The general contract for the erection of the garage and sales-rooms of the Kline Kar Co. in Grand boulevard was awarded recently. The building will be a one-story brick and terra cotta structure, 60 by 45 feet, with a fireproof roof and fitted out with steam heating systems.

**Syracuse, N. Y.**—E. F. Howell, of Buffalo, N. Y., has been appointed district manager for the Chase Motor Truck Co. He will make his headquarters at the Philadelphia branch of the company, 1351 Ridge avenue, and his territory will include portions of Maryland, Pennsylvania and New Jersey, also the entire state of Delaware. D. R. Linsley, formerly with the Pierce-Arrow Motor Car Co., Buffalo, N. Y., has accepted a position as salesman with the Chase Motor Truck Co. He will

make his headquarters at Syracuse and travel through central and northern New York.

**Menominee Falls, Wis.**—The J. B. and E. J. Wittlin Motor Co., Ford agent, is building a new 42 by 80-foot garage on its old site.

**Kokomo, Ind.**—A. L. Tisch, of New York, has just been appointed manager of the advertising department of the Haynes Automobile Co.

**Racine, Wis.**—A. R. Lauson, successor to Lauson & Leonard, has opened a garage and sales room at Erie and State streets. He will continue handling the Ford.

**Detroit, Mich.**—The Packard Motor Car Co. announces C. E. Morton as the traveling representative of its sales department with headquarters at the factory. He will devote much of his time to southern territory.

**Worcester, Mass.**—The H. B. Pulsifer Co., local agent for the Flanders and E-M-F, has changed its name to the Studebaker-Worcester Co. and taken quarters in the same block as that of the Warren Garage Co., on Vine street.

**Worcester, Mass.**—Car agencies in this territory have changed hands during the last 2 weeks, Joseph J. Bouthillier, 220 Chandler street, taking over the Elmore, formerly handled by Lemont Motor Car Co.; the Worcester Motor Car Co., agent for the Stearns and Franklin, taking the Worcester county agency for the Hudson cars.

**Syracuse, N. Y.**—L. A. McKay, who has directed western sales for the Franklin Automobile Co. from the home office, has been appointed sales manager for the St. Paul and Omaha territory, which includes the states of Minnesota, Wisconsin, the Northern Peninsula of Michigan, North Dakota, South Dakota, Nebraska, Kansas, Missouri, western Iowa, and the provinces

of Manitoba and Saskatchewan. Mr. McKay has removed to his new headquarters at Minneapolis.

**Boston, Mass.**—The Standard Tire and Rubber Co., of Boston, has secured the New England agency for Motz tires.

**Spokane, Wash.**—J. W. Hereford, of Spokane, has recently closed a contract for the selling rights of the Oldsmobile in Spokane territory.

**Philadelphia, Pa.**—Officers and show-rooms of the Broad Street Top Co. have been removed to the fourth floor of the building No. 142 North Broad street.

**Columbus, O.**—Frank H. Lawwell, formerly a dealer under the name of the Franklin Motor Car Co., has filed a petition in bankruptcy with liabilities of only \$1,528.

**Boston, Mass.**—The Clyde H. Smith Auto Co., of Skowhegan, Me., New England distributor of the Elmore car, has arranged for representation in Boston by the Regent Circle Garage Co.

**Detroit, Mich.**—E. E. McCleish has resigned his position as advertising manager of the Paige-Detroit Motor Car Co. to accept a position as advertising manager of the Airlane Motor Co.; manufacturers of aero motors under the Curtis patents.

**Pittsburgh, Pa.**—The Michigan Automobile Co., agent in western Pennsylvania for the Michigan and Westcott cars, has established a new garage and salesroom at 5937 Penn avenue. The change was made because of lack of space in the old quarters at 139 Seventh street.

**Indianapolis, Ind.**—F. C. Headington has been appointed manager of the Indianapolis sales branch of the Haynes Automobile Co., Kokomo. Mr. Headington has been located at Alexandria, Ind. G. A. Richey, formerly with the Central Rubber and Supply Co., has been appointed manager of the Columbia-Knight depart-

## New Agencies Appointed by Car and Truck Manufacturers

Town	Agent	Car
Boston, Mass.	R. G. Howard	Bessemer
Brookline, Mass.	Regent Circle Garage	Nyberg
Buffalo, N. Y.	Frontier Motor Car Co.	Empire
Burlington, Ia.	Sultor and Gamble	Cole
Calgary, Can.	John R. Porter	Cole
Chicago	W. T. Cluney	Westcott
Cincinnati, O.	Central Motor Sales Co.	Brush
Cleveland, O.	Alco Motor Car Co.	Alco
Columbus, O.	Oscar Lear Motor Car Co.	Modern
Cuddebackville, N.Y.	C. V. Predmore	Westcott
Defiance, O.	A. M. Kruse	Cole
Denver, Colo.	Colburn Automobile Co.	Little Giant
Denver, Colo.	McDuffee Motor Co.	Wichita Falls
Denver, Colo.	Western Motor Car Co.	Abbott-Detroit
Dixon, Ill.	Joe E. Miller	Cole
Ft. Wayne, Ind.	R. B. Rayner	Clark-Carter
Granville, Ill.	Sidney Whitaker	Franklin
Greensburg, Pa.	Standard Automobile Co.	Franklin
Indianapolis, Ind.	Gibson Auto Co.	Empire
Jersey City, N. J.	J. Muldoon	Handy Wagon
Joliet, Ill.	Moore and Kicksels	E-M-F
Kansas City, Mo.	Southwest Motor Co.	Reo
Keokuk, Ia.	Water Power Garage	Cole
Lorain, O.	Jackson-Harrison Auto Sales Co.	Overland
Mexico, N. Y.	Charles H. Everts	Franklin
Minneapolis, Minn.	Viehman Auto Co.	Auburn
Montreal, Can.	Victor Levesque	Abbott-Detroit
New Albany, Ind.	Borgerding Motor Car Co.	Cole
Newark, N. J.	Oakland Agency	Empire
New York	Cimlott Brothers	Empire
Newport News, Va.	R. J. Rhodes	Abbott-Detroit
Norwood, O.	Bush Parker	Westcott

Town	Agent	Car
Norwood, O.	Norwood Machine Co.	Abbott-Detroit
Oakwood, Ill.	G. H. Malton	Handy Wagon
Otis, Mass.	A. M. Hazzard	Handy Wagon
Patton, Pa.	A. C. Fisher	Ford
Philadelphia, Pa.	B. M. Sharp	Michigan
Plymouth, Pa.	Reese Machine & Tool Wks.	Abbott-Detroit
Rochester, N. Y.	Abbott-Detroit Sales Co.	Empire
San Angelo, Tex.	Montague and Ede Co.	Cole
San Francisco, Cal.	Pacific Motor Car Co.	Herreshoff
San Francisco, Cal.	Standard Motor Car Co.	Courier-Clermont
Scranton, Pa.	Mack Brothers	Hewitt
Sherburne, N. Y.	Hugh Bryan	Cole
Sizersville, Pa.	D. R. Sizer	Handy Wagon
Somerville, Mass.	Brooks & Palmer	Sanford
Springfield, Mo.	F. D. Davis	Metz
St. Louis, Mo.	Johnson Auto Co.	Empire
St. Paul, Minn.	Western Automobile Co.	Marquette
Sterling, Colo.	Ideal Auto and Machine Co.	Franklin
Syracuse, N. Y.	James Auto Co.	Empire
Toledo, O.	L. L. Blood	Reo
Trenton, N. J.	Risdon Motor Car Co.	Empire
Tulare, S. D.	Tulare Auto Co.	Cole
Washington, D. C.	R. H. Love	King
Washington, D. C.	H. B. Leary, Jr.	Mitchell
Washington, D. C.	H. B. Leary, Jr.	Rambler
Washington, D. C.	Earle and Allen	Simplex
Washington, D. C.	Potomac Motor Car Co.	Marmion
Washington, D. C.	H. B. Leary, Jr.	Mitchell
Washington, D. C.	H. B. Leary, Jr.	Rambler
W. Hartford, Conn.	G. L. Kaeser	Empire
York, Pa.	Lacrone Garage	Cartercar
Zanesville, O.	Zanesville Taxicab Co.	Abbott-Detroit

ment of the United Motor Indianapolis Co., succeeding H. A. Townsley, who is now with the National sales branch.

**Cincinnati, O.**—An agency for the Ajax tires has been opened at 803 Race street by A. G. E. Hanke and E. H. Rothe.

**Ogdensburg, N. Y.**—The Hannan & Henry garage was burned April 5. The total loss, with two buildings, is \$150,000, there being sixty-five cars burned.

**Lindaborg, Kas.**—P. E. Zimmerman, advertising manager and credit man for the Hagstrom Brothers Mfg. Co., has been appointed general manager of that concern.

**Pittsburgh, Pa.**—C. F. Gerber, local agent for the Michigan Motor Car Co., who has charge of the territory east of the Mississippi, will make his headquarters in Pittsburgh. He has secured show rooms in Collins avenue which will accommodate fifty machines.

**Baltimore, Md.**—Because of the lack of space due to increased business the Zell Motor Car Co., Peerless and Chalmers-Detroit agents, has decided to do away with its storage department. The storage room will be used in the new service department which will be in operation on and after April 1.

**Kansas City, Mo.**—W. S. Hathaway, who formerly was located at 3760 Broadway, Kansas City, has purchased the entire business and equipment of the C. L. Taylor Motor Car Co., 1618 Grand avenue, and the name has been changed to the Southwest Motor Co., as the territory has been somewhat enlarged. The new organization

will handle the Reo line exclusively and has already taken over all of the old sub-dealers.

**Toledo, O.**—Joseph W. Kessler, who at one time conducted a Madison avenue sales agency, has accepted a position with the Blevins Auto Co.

**Seattle, Wash.**—E. E. Sears and C. M. Wingham have formed the Sears Motor Car Agency and will handle the Hupmobile line for northwest Washington.

**San Francisco, Cal.**—Captain F. W. Cole, of San Francisco, has announced the organization in this city of the Pan-American Motor Co. and the purchase by that company of the interests of the Kiel & Evans Co. in the Moon and Michigan cars.

**Youngstown, O.**—The Motor Necessities Co. has organized by electing officers. The company has a capital of \$10,000. The officers are: President and treasurer, C. T. Gaither; vice-president, Dr. L. H. Black; secretary, O. G. Diebel. The company will erect a factory.

**Pittsburgh, Pa.**—The Vesta Motor Car Co., agent for the Stevens-Duryea and Velie, as well as the Little Giant and Universal motor trucks, is contemplating moving its service facilities to the Rittenhouse block, in Baum street. The salesrooms were moved several days ago.

**Worcester, Mass.**—Peter A. Coghlin, agent for the Reo, has opened a new salesroom at 259 Main street. Edward F. Sweeney plans to open an agency for the Speedwell on Commercial street. Arthur F. Clough has taken over the agency for the R. C. H. and established headquarters

in the Palace Auto Station at 735 Main street. Mr. Clough also represents indirectly the Stoddard-Dayton cars.

**Boston, Mass.**—The Ellis Steel Cushion Tire Co. has joined the Boston colony and has opened headquarters at 585 Boylston street.

**Lincoln, Neb.**—Cover & Allen have opened a garage at 231 South Eleventh street. They will sell the Inter-State car, and also run a livery service.

**St. Louis, Mo.**—A service station has been opened at 3221 Olive street, by the Chase Power Wagon Co., of Missouri, which has the agency for the Chase delivery.

**Worcester, Mass.**—Frederick B. Williams, head of the Worcester Motor Car Co., agents for the Hudson, Stearns and Franklin, has purchased the property at 3 Church street, occupied by the company for the last 5 years, and will remodel it into salesroom and garage.

**Pittsburgh, Pa.**—Bishop & Ports, Inc., of Walnut street, have secured the Pittsburgh agency for the Rauch & Lang electric and are remodeling their three-story livery barn into a modern garage and salesroom equipped with the latest conveniences for selling, displaying and storing vehicles.

**Worcester, Mass.**—Four new agencies have been established here. The Motor Sales Co., a new concern, will handle the Oakland; Whallen Brothers, the Marion cars; L. A. Ford, with headquarters on Clifton street, the Warren, while C. F. Streeter will take care of the sales of the Bergdoll products.

**Dayton, O.**—Dayton Auto Delivery and Service Co., capital stock, \$25,000; general delivery business; incorporators, J. C. Hamilton, S. Flatan, W. H. Speckler, Dr. H. C. McClelland, E. V. Menier.

**Cleveland, O.**—D. G. Hutchcroft & Sons Co., capital stock, \$10,000; to manufacture motor cars, bodies, parts, etc.; incorporators, D. G. Hutchcroft, G. W. Hutchcroft, T. Hutchcroft, W. Merts, S. H. Meacham.

**Gallion, O.**—Gallion Motor Truck Co., capital stock, \$5,000; to manufacture and sell motor cars, truck parts, etc.; incorporators, J. A. Smith, E. A. Williams, E. A. Shearer, D. M. Yarger, W. L. Hampton.

**Middletown, O.**—Middletown Motor Car Co., capital stock, \$15,000; to buy and sell motor car parts and accessories; incorporators, D. N. Gingerich, L. F. Steckrath, W. M. Warner, H. S. Mitchell, C. D. Hall.

**Worcester, Mass.**—Worcester Auto Parts Co., capital stock, \$10,000; general motor car supply business; directors, J. H. Heald, C. A. Cowan, J. A. Doane.

**Boston, Mass.**—Chauffeurs' Legal Association, capital stock, \$10,000; incorporators, J. R. Benton, G. A. Kearsley, G. D. Harrigan.

**Utica, N. Y.**—Bauer-Jackson Auto Co., capital stock, \$2,000; directors, W. C. Bauer, F. G. Jackson, G. H. Jackson.

**Wilmington, Del.**—Jiffy Auto Curtain Co., capital stock, \$100,000.

**Wilmington, Del.**—Ideal Combination Co., capital stock, \$100,000; to deal in vehicles, carriages, trucks, engines, motor brasses and fittings; incorporators, W. Litzburg, I. S. Morgan, J. M. Frere.

**Philadelphia, Pa.**—Moon Motor Car Co., capital stock, \$100,000; to deal in motor cars, etc.; incorporators, L. T. Edwards, E. A. Edwards, J. M. Frere.

**New York**—Eclipse Rubber and Tire Co., capital stock, \$50,000; incorporators, S. J. Schwartz, A. A. Glass, H. A. Bloomberg.

**Ada, Minn.**—Norman County Automobile Co., capital stock, \$50,000; incorporators, P. Matson, L. Hintze, J. Ahlers, O. P. Melberg, M. O. Melberg, H. W. Thune, S. Tunstad, E. C. Holland, J. M. Hetland, E. C. Betcher, C. C. Allen, M. A. Brattland, D. C. Lightbourn, C. F. Strong.

## Recent Incorporations

**Edgewater, N. J.**—Steinbock Engineering Co., capital stock, \$1,000,000; to manufacture motor cars, etc.; incorporators, E. J. Forhan, F. B. Knowlton, J. McLaren.

**Salt Lake, Utah**—Salt Lake Automobile Co., capital stock, \$25,000; incorporators, J. E. Langford, A. Snow, A. L. Taylor.

**Chicago**—Automatic Motor Devices Co., capital stock, \$5,000; to manufacture accessories; incorporators, S. S. Holmes, P. J. Hower, W. D. Hawk.

**Mobile, Ala.**—Cadillac Motor Co., capital stock, \$20,000; incorporators, C. W. Harrington, L. G. Adams, H. M. Harrington.

**Chicago**—Joseph Marker Co., capital stock, \$2,000; to manufacture vehicles; incorporators, H. Marker, K. Marker, F. Hargeshelmer.

**Minneapolis, Minn.**—Parker Garage Co., capital stock, \$10,000; incorporators, J. G. Pelton, E. H. Schoemann, F. T. Dexter.

**Keokuk, Ia.**—Keokuk Hydraulic Tire Setter Co., capital stock, \$50,000; incorporators, C. A. Devero, J. A. Mock, M. L. Mock.

**Grove Park, N. C.**—Grove Park Motor Car Co., capital stock, \$20,000; incorporators, E. W. Grove, W. F. Randolph, J. S. Adams.

**Gary, Ind.**—Motor Bus Transit Co., capital stock, \$20,000; to operate motor buses; incorporators, F. M. Stults, J. F. Cranthan, J. W. Lyddick.

**Louisville, Ky.**—Sutherland Automobile Air Appliance Co., capital stock, \$10,000; incorporators, L. Sutherland, C. Burba, M. W. McGrath.

**Detroit, Mich.**—Wolverine Tire Co., capital stock, \$25,000; to manufacture and deal in motor car tires, etc.; incorporators, E. R. Robinson, P. G. Robinson, H. H. Smith.

**New York**—E. D. Gear Co., capital stock, \$60,000; to manufacture gears, etc.; incorporators, D. J. Rice, J. P. Eadie, G. Keating.

**Jersey City, N. J.**—Atlantic Vehicle Co., capital stock, \$340,000; to manufacture vehicles; incorporators, M. Black, L. R. Jillson, J. R. Turner.

**New York**—Mars Aviation Co., capital stock, \$10,000; incorporators, J. C. Mars, G. H. G. Smyth, M. Mars.

**New York**—Sullivan Garage Co., capital stock, \$15,000; incorporators, M. E. MacAdam, J. M. MacAdam, P. B. Riley.

**New Rochelle, N. Y.**—Cedar Auto and Marine Co., capital stock, \$2,500; incorporators, C. A. McGill, A. B. McGill.

**Rochester, N. Y.**—Pembroke Mfg. Co., capital stock, \$50,000; to manufacture motor cars and parts; incorporators, C. J. Pembroke, W. P. Pembroke, W. J. Fellows.

**New York**—Elsmere Cab and Car Co., capital stock, \$1,000; motor car delivery; incorporators, E. Engledrum, M. E. Morgan, J. Engledrum.

**New York**—Detroit Co. of New York, capital stock, \$5,000; general motor car business; incorporators, H. G. Outwater, A. Walz, J. Walz.

**New York**—Combination Transmission-Clutch Co., capital stock, \$10,000; incorporators, L. E. Bomeisler, G. Isaken, H. Gustow.

**New York**—Yellow Taxicab Co., capital stock, \$5,000,000; incorporators, S. G. Trainor, B. Bag, L. Robinson.

**New York**—Amsterdam Starter Co., capital stock, \$5,000; to manufacture starting devices for motor cars; incorporators, E. S. Greene, R. L. Weaver, S. S. Weaver.

**Hastings, N. Y.**—Post Road Transportation Co., capital stock, \$100,000; to operate motor bus line; incorporators, G. T. Brown, C. F. Judson, P. N. Hayes.

**East Aurora, N. Y.**—East Aurora Motor Car Co., capital stock, \$5,000; incorporators, A. L. Pierce, N. B. Paxson, W. S. Wilson.

**New York**—Royal Motor Truck Co., capital stock, \$10,000; incorporators, A. J. Cohen, W. S. Weiss, H. J. Leffert.

**New York**—R. A. S. Spring and Bumper Co., capital stock, \$1,000; incorporators, G. Steller, V. H. Anderson, G. E. Pinkenberger.

**New York**—Non-Skid Chain Co., capital stock, \$250,000; to manufacture chains and skidding devices.